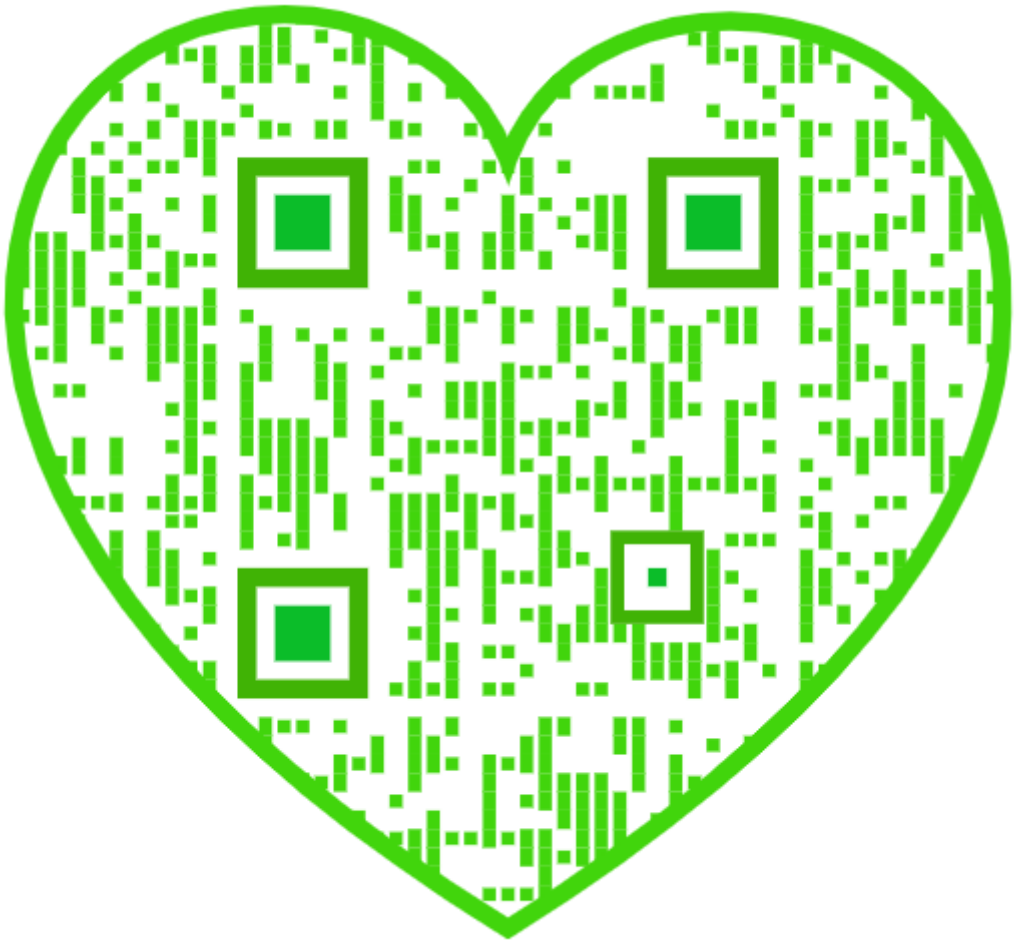

TRANSACTIONS

OF THE

American Association

OF

Obstetricians and Gynecologists

VOL. XIX

FOR THE YEAR 1906

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NOTE

The Association does not hold itself responsible for the views enunciated in the papers and discussions published in this volume.

WILLIAM WARREN POTTER, *Secretary*,
238 DELAWARE AVENUE, BUFFALO.

[Minutes and discussions stenographically reported by WILLIAM WHITFORD, Chicago, Ill.]

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CONSTITUTION AND BY-LAWS

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

TOGETHER WITH

MINUTES OF THE NINETEENTH ANNUAL MEETING

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AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

CONSTITUTION.

I. The name of this Association shall be THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

II. Its object shall be the cultivation and promotion of knowledge in whatever relates to Abdominal Surgery, Obstetrics, and Gynecology.

MEMBERS.

III. The members of this Association shall consist of Ordinary Fellows, Honorary Fellows, and Corresponding Fellows.

The Ordinary Fellows shall not exceed one hundred and fifty in number.

The Honorary Fellows shall not exceed ten American and twenty-five foreign.

Candidates shall be proposed to the Executive Council at least one month before the first day of meeting, by two Fellows, and shall be balloted for at the annual meeting, a list of names, having been sent to every Fellow with the notification of the meeting.

A two-thirds vote in the affirmative of all the members present shall be necessary to elect—fifteen Fellows at least being in attendance.

All candidates for active fellowship shall submit to the Executive Council, at least one month before the annual meeting, an original paper relating to Abdominal Surgery, Obstetrics, or Gynecology.

HONORARY FELLOWS.

IV. The power of nominating Honorary Fellows shall be vested in the Executive Council.

Their election shall take place in the same manner as that of Ordinary Fellows.

They shall enjoy all the privileges of Ordinary Fellows, excepting to vote or hold office, but shall not be required to pay any fee.

CORRESPONDING FELLOWS.

V. The Corresponding Fellows shall be recommended by the Executive Council and elected by the Association.

They shall enjoy all the privileges of Ordinary Fellows, excepting to vote or hold office, and shall be entitled to a copy of the annual TRANSACTIONS.

They shall pay an annual fee of five dollars.

OFFICERS.

VI. The officers of this Association shall be a President, two Vice-Presidents, a Secretary, a Treasurer, and six Executive Councillors.

The nomination of all officers shall be made in open session at the business meeting, and the election shall be by ballot.

The first five officers shall enter upon their duties immediately before the adjournment of the meeting at which they shall be elected, and shall hold office for one year.

["At the election next succeeding the adoption of these laws, the full number of Executive Councillors shall be elected; two for a term of three years, two for a term of two years, and two for a term of one year.

"At every subsequent election two Councillors shall be elected for a term of three years, and shall continue in office until their successors shall have been elected and shall have qualified."][1]

Any vacancy occurring during the recess may be filled temporarily by the Executive Council.

ANNUAL MEETINGS.

VIII. The time and place of holding the annual meeting shall be determined by the Association or may be committed to the Executive Council each time before adjournment.

It shall continue for three days, unless otherwise ordered by vote of the Association.

[1] Amendment adopted September 21, 1898.

AMENDMENTS.

VIII. This Constitution may be amended by a two-thirds vote of all the Fellows present at the annual meeting: *provided*, that notice of the proposed amendment shall have been given in writing at the annual meeting next preceding: and *provided*, *further*, that such notice shall have been printed in the notification of the meeting at which the vote is to be taken.

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

BY-LAWS.

THE PRESIDING OFFICER.

I. The President, or in his absence, one of the Vice-Presidents, shall preside at all meetings, and perform such other duties as ordinarily pertain to the Chair.

The presiding officer shall be *ex-officio* chairman of the Executive Council, but shall vote therein only in case of a tie.

SECRETARY.

II. The Secretary shall attend and keep a record of all meetings of the Association and of the Executive Council, of which latter he shall be *ex-officio* clerk, and shall be entitled to vote therein.

He shall collect all moneys due from the members, and shall pay the same over to the Treasurer, taking his receipt therefor.

He shall supervise and conduct all correspondence of the Association; he shall superintend the publication of the TRANSACTIONS under the direction of the Executive Council, and shall perform all the ordinary duties of his office.

He shall be the custodian of the seal, books, and records of the Association.

TREASURER.

III. The Treasurer shall receive all moneys from the Secretary, pay all bills, and render an account thereof at the annual meetings, when an Auditing Committee shall be appointed to examine his accounts and vouchers.

EXECUTIVE COUNCIL.

IV. The Executive Council shall meet as often as the interests of the Association may require. The President, or any three members may call a meeting, and a majority shall constitute a quorum.

It shall have the management of the affairs of the Association, subject to the action of the house at its annual meetings.

It shall have control of the publications of the Association, with full power to accept or reject papers or discussions.

It shall have control of the arrangements for the annual meetings, and shall determine the order of the reading of papers.

It shall constitute a court of inquiry for the investigation of all charges against members for offences involving law or honor; and it shall have the sole power of moving the expulsion of any Fellow.

ORDER OF BUSINESS.

V. The Order of Business at the annual meetings of the Association shall be as follows:

1. General meeting at 10 o'clock A.M.
   a. Reports of Committees on Scientific Questions.
   b. Reading of Papers and Discussion of the same.
2. One business Meeting shall be held at half-past nine o'clock A.M. on the first day of the session, and another on the evening of the second day (unless otherwise ordered by vote), at which only the Fellows of the Association shall be present. At these meetings the Secretary's record shall be read; the Treasurer's Accounts submitted; the reports of Committees on other than scientific subjects offered; and all Miscellaneous Business transacted.

PAPERS.

VI. The titles of all papers to be read at any annual meeting shall be furnished to the Secretary *not later* than one month before the first day of the meeting.

No paper shall be read before the Association that has already been published, or that has been read before any other body.

Not more than thirty minutes shall be occupied in reading any paper before the Association.

Abstracts of all papers read should be furnished to the Secretary at the meeting.

All papers read before the Association shall become its sole property if accepted for publication; and the Executive Council may decline to publish any paper not handed to the Secretary *complete* before the final adjournment of the annual meeting.

QUORUM.

VII. The Fellows present shall constitute a quorum for all business, excepting the admission of new Fellows or acting upon amendments to the Constitution, when not less than fifteen Fellows must be present.

DECORUM.

VIII. No remarks reflecting upon the personal or professional character of any Fellow shall be in order at any meeting, except when introduced by the Executive Council.

FINANCE.

IX. Each Fellow, on admission, shall pay an initiation fee of twenty-five dollars, which shall include his dues for the first year.

Every Fellow shall pay, *in advance* (*i.e.*, at the beginning of each fiscal year) the sum of twenty dollars annually thereafter.

[A fiscal year includes the period of time between the first day of one annual meeting and the first day of the next.]

Any Fellow neglecting to pay his annual dues for two years may forfeit his membership, upon vote of the Executive Council.

The Secretary shall receive, annually, a draft from the President, drawn on the Treasurer, for a sum, to be fixed by the Executive Council, for the services he shall have rendered the Association during the year.

A contingent fund of one hundred dollars shall be placed annually at the disposal of the Secretary for current expenses, to be disbursed by him, and for which he shall present proper vouchers.

ATTENDANCE.

X. Any Fellow who shall neither attend nor present a paper for three consecutive years, unless he offer a satisfactory excuse, may be dropped from fellowship, upon vote of the Executive Council.

RULES.

XI. *Robert's Rules of Order* shall be accepted as a parliamentary guide in the deliberations of the Association.

AMENDMENTS.

XII. These By-Laws may be amended by a two-thirds vote of the Fellows present at any meeting; *provided*, previous notice in writing shall have been given at the annual meeting next preceding the one at which the vote is to be taken.

OFFICERS FOR 1906-1907

PRESIDENT.

ROBERT TUTTLE MORRIS, NEW YORK.

VICE-PRESIDENTS.

GEORGE W. CRILE, CLEVELAND.

CHARLES LYBRAND BONIFIELD, CINCINNATI.

SECRETARY.

WILLIAM WARREN POTTER, BUFFALO.

TREASURER.

XAVIER OSWALD WERDER, PITTSBURG.

EXECUTIVE COUNCIL.

HUGO OTTO PANTZER, INDIANAPOLIS.

RUFUS BARTLETT HALL, CINCINNATI.

JAMES F. W. ROSS, TORONTO.

WALTER BLACKBURN DORSETT, SAINT LOUIS.

JOHN YOUNG BROWN, SAINT LOUIS.

HOWARD WILLIAMS LONGYEAR, DETROIT.

HONORARY FELLOWS

* Deceased.

1899.—BALLANTYNE, JOHN WILLIAM, M.D., F.R.C.P.E., F.R.S. Edin. Lecturer on Midwifery and Gynecology, School of the Royal College, Edinburgh; Examiner in Midwifery and Gynecology in the University of Edinburgh; Vice-President of the Edinburgh Obstetrical Society; Honorary Fellow of the Glasgow Obstetrical and Gynecological Society. 24 Melville Street, Edinburgh, Scotland.

1889.—BANTOCK, GEORGE GRANVILLE, M.D., F.R.C.S. Ed. Surgeon to the Samaritan Free Hospital. 14 Upper Hamilton Terrace, London, N. W., England.

1889.—BARBOUR, SIR A. H. FREELAND, M.A., B.S.C., M.D., F.R.C.P., Ed., F.R.S. Ed. Lecturer on Midwifery and Diseases of Women in the Edinburgh Medical School; Assistant Physician to the Royal Maternity Hospital; Assistant Physician for Diseases of Women to the Royal Infirmary; Physician to the Women's Dispensary; Fellow of the Edinburgh and London Obstetrical Societies, and of the British Gynecological Society; Corresponding Fellow of the Royal Academy of Medicine, Turin. 4 Charlotte Square, Edinburgh, Scotland.

1892.—*BOISLINIERE, L. Ch., A.B., M.D., LL.D., Saint Louis, Mo. 1896.

1890.—CHAMPIONNIÉRE, JUST. LUCAS, M.D. 3 Avenue Montaigne, Paris, France.

1889.—*CHARPENTIER, LOUIS ARTHUR ALPHONSE, M.D. Paris, France. 1899.

1888.—CORDES, AUGUST ELISÉE, M.D. Member of the Royal College of Physicians, London; Fellow of the Obstetrical Society of London and of the British Gynecological Society; Corresponding National Member of the Obstetrical and Gynecological Society of Paris; Honorary Fellow of the Detroit Gynecological

Society; late "Chirurgien-adjoint" of the Obstetrical and Gynecological Clinic at the Maternity at Geneva; Consulting Accoucheur of the Misericorde Hospital, etc.; Perpetual member of the Société Obstétricale de France, Paris, France. 12 Rue Bellot, Geneva, Switzerland.

1890.—*Corson, Hiram, M.D., Plymouth Meeting, Pa. 1896.

1889.—Croom, Sir J. Halliday, M.D., F.R.C.P.E., F.R.C.S.E., F.R.S.E. Physician to and Clinical Lecturer on Diseases of Women, Royal Infirmary, Edinburgh; Physician to the Royal Maternity Hospital; Lecturer on Midwifery and the Diseases of Women at the School of Medicine; Consulting Physician for Diseases of Women, Western Dispensary. 25 Charlotte Square, Edinburgh, Scotland.

1889.—*Dunlap, Alexander, A.M., M.D., Springfield, O. 1894.

1888.—*Edis, Arthur Wellesley, M.D. Lond. F.R.C.S., M.R.S.C.S. London, England. 1893.

1889.—*Eklund, Abraham Fredrik, M.D. Stockholm, Sweden. 1898.

1891.—Fernandez, Juan Santos, M.D. Prado, No. 105, Havana, Cuba.

1891.—*Fisher, George Jackson, A.M., M.D. Sing Sing, N. Y. 1893.

1889.—Freund, William Alexander, M.D. Emeritus Professor and Director of the Clinic for Diseases of Women in the University of Strassburg. Kleiststrasse 9, Berlin W., Germany.

1896.—*Gaston, James McFadden, A.M., M.D. Atlanta, Ga. 1903.

1892.—*Green, Traill, M.D., LL.D. Easton, Pa. 1897.

1894.—Jacobs, Charles, M.D. Professor of the Faculty of Medicine of Brussels; Secretary-General of the Permanent Committee of the Periodic International Congress of Gynecology and Obstetrics; Honorary President of the Belgian Society of Gynecology and Obstetrics; Honorary Fellow of the Gynecological Societies of New York and Chicago; Member of the Southern Surgical and Gynecological Association; Corresponding Member of the Gynecological Society of Paris; Surgeon to the Brussels Polyclinic. 53 Boulevard de Waterloo, Brussels, Belgium.

1889.—*KEITH, THOMAS, M.D. London, England. 1896.

1889.—LEOPOLD, G., M.D. Professor in the Royal Clinic for Diseases of Women. 90 Pfotenhauerstrasse, Dresden, Germany.

1905.—MCGRAW, THEODORE A., M.D. 73 Cass Street, Detroit, Mich.

1894.—*MACLEAN, DONALD, M.D. Detroit, Mich. 1903.

1890.—MARTIN, AUGUST, M.D. Professor of Gynecology in the University of Greifswald. Griefswald, Germany.

1895.—*MASTIN, CLAUDIUS HENRY, M.D., LL.D. Mobile, Ala. 1898.

1897.—MATHEWS, JOSEPH MCDOWELL, M.D. Professor of Diseases of the Rectum and Clinical Surgery, Hospital College of Medicine; President of the Kentucky State Board of Health; First Vice-President American Medical Association, 1898; President, 1899. 923 Fourth Avenue, Louisville, Kentucky.

1891.—*MOSES, GRATZ ASHE, M.D. Saint Louis, Mo. 1901.

1905.—*MYERS, WILLIAM HERSCHEL, M.D. (*Founder.* Transferred from Ordinary List.) Fort Wayne, Ind. 1907.

1889.—NICOLAYSEN, JULIUS, M.D. Professor of Surgery in the University of Norway. Christiania, Norway.

1891.—PIETRANERA, E., M.D. Professor of Obstetrics in the Medical Department of the National University; Director of the Maternity Branch of the Clinical Hospital. 2711 Calle Rio Adaria, Buenos Ayres, Argentine Republic, S. A.

1889.—*SAENGER, MAX, M.D. Prague. 1903.

1890.—SAVAGE, THOMAS, M.D., F.R.C.S. Eng. Surgeon to the Birmingham Hospital for Women. 133 Edmund Street, Birmingham, England.

1889.—SCHULTZE, BERNHARD SIGMUND, M.D. Professor of Gynecology; Directory of the Lying-in Institute and of the Gynecological Clinic. 2 Sellierstrasse, Jena, Germany.

1896.—SÉGOND, PAUL, M.D. Professor of the Faculty of Medicine, Paris; Surgeon to the Salpétrière; Principal Physician to the Orleans Railroad. 11 Quai d'Orsay, Paris, France.

1899.—SINCLAIR, SIR WILLIAM JAPP, M.A., M.D. (Aberd.), M.R.C.P. Professor of Obstetrics and Gynecology, Owens College, Victoria University; Physician to the Manchester Southern Hospital for Diseases of Women and Children. Garvock House, Dudley Road, Whalley Range, Manchester, England.

1894.—*SLAVIANSKY, KRONID, M.D. St. Petersburg, Russia. 1898.

1888.—*SMITH, J. GREIG, M.A., C.M., M.B., F.R.S.E. Bristol, England. 1897.

1896.—STERNBERG, GEORGE MILLER, A.M., M.D., LL.D. Surgeon-General U. S. Army (Retired). 2005 Massachusetts Avenue, Washington, D. C.

1899.—* STORRS, MELANCTHON, A.M., M.D. (*Founder.* Transferred from Ordinary List.) Hartford, Conn. 1900.

1888.—*TAIT, LAWSON, M.D., LL.D., F.R.C.S.E. Birmingham, England. 1899.

1905.—TAYLOR, WILLIAM HENRY, M.D. *President*, 1888–1889. (*Founder.* Transferred from Ordinary List.) 553 West Seventh Street, Cincinnati, Ohio.

1900.—*THORNTON, J. KNOWSLEY, M.B., M.C. Cambridge, England. 1904.

1888.—WILLIAMS, SIR JOHN, BART., M.D., F.R.C.P. Plâs Llanstephan, Carmarthenshire, Wales.

1901.—WEBER, GUSTAV C. E., M.D., LLD. Willoughby, Ohio.

1889.—VON WINCKEL, F., M.D. Professor of Gynecology and Director of the Royal Hospital for Women; Member of the Supreme Council and of the Faculty of Medicine in the University of Munich. 16A Sonnenstrasse, Munich, Germany.

1905.—WYMAN, WALTER, M.D. Surgeon General United States Public Health and Marine Hospital Service. Stoneleigh Court, Washington, D. C.

Total, twenty-five Honorary Fellows.

CORRESPONDING FELLOWS

1899.—BEUTTNER, OSCAR, M.D. Privat-docent of the Faculty of Medicine. 2 Place de la Fasterie, Geneva, Switzerland.

1903.—CROZEL, G., M.D. Professor Libre of Gynecology. Collonges au Mont d'Or (Rhone), France.

1903.—ELLIS, GUILHERME, M.D. Chief Surgeon to the Real Sociedade de Beneficencia Portuguese Hospital. 6 Rua Aurora, S. Paulo, Brazil, S. A.

1891.—GRIFFIN, HERBERT SPOHN, B.A., M.D. Surgeon to Hamilton City Hospital; Examiner in Obstetrics, University of Toronto. 157 Main Street, Hamilton, Ontario, Canada.

1903.—LANE, HORACE MANLEY, M.D., LL.D. President of Mackenzie College, S. Paulo, Brazil. 184 Rua da Consolacao, S. Paulo, Brazil, S. A.

1891.—MACHELL, HENRY THOMAS, M.D., L.R.C.P. Ed. Lecturer on Obstetrics, Women's Medical College; Surgeon to St. John's Hospital for Women; Physician to Victoria Hospital for Sick Children and to Hillcrest Convalescent Home. 95 Bellevue Avenue, Toronto, Ontario, Canada.

1898.—WRIGHT, ADAM HENRY, B.A., M.D. Univ. Toronto, M.R.C.S., Eng.; Professor of Obstetrics in the University of Toronto; Obstetrician and Gynecologist to the Toronto General Hospital and Burnside Lying-in Hospital. *President*, 1891. (Transferred from Ordinary List, 1898.) 30 Gerrard Street, East, Toronto, Ont., Canada.

Total, seven Corresponding Fellows.

ORDINARY FELLOWS

* Deceased. † Resigned.

1902.—ABRAMS, EDWARD THOMAS, A.M., M.D. Consulting Surgeon to the Lake Superior General Hospital; Member of the Michigan State Medical Society; Member of the American Medical Association. Dollar Bay, Mich.

1890.—ASDALE, WILLIAM JAMES, M.D. Professor of Diseases of Women, Western Pennsylvania Medical College (Medical Department, University of Western Pennsylvania). 5523 Ellsworth Avenue, Pittsburg, Pa.

1895.—BACON, JOSEPH BARNES, M.D. Professor of Rectal Diseases at the Post-Graduate Medical School; Instructor in Clinical Surgery in the Medical Department of Northwestern University, Chicago. Macomb, Ill.

Founder.—*BAKER, WASHINGTON HOPKINS, M.D. Philadelphia, Pa. 1904.

1895.—BALDWIN, JAMES FAIRCHILD, A.M., M.D. Surgeon to Grant Hospital, 125 South Grant Avenue. Residence, 405 E. Town Street, Columbus, Ohio.

1903.—BANDLER, SAMUEL WYLLIS, M.D. Instructor in Gynecology in the New York Post-Graduate Medical School and Hospital; Adjunct Gynecologist to the Beth Israel Hospital. 134 West Eighty-seventh Street, New York, N. Y.

1889.—BARROW, DAVID, M.D. Member of the Southern Surgical and Gynecological Association. Residence, 379 South Broadway; Office, 148 Market Street, Lexington, Ky.

1892.—BLUME, FREDERICK, M.D. Gynecologist to the Allegheny General Hospital and Pittsburg Free Dispensary; Obstetrician to the Roselia Maternity Hospital; Consulting Gynecolo-

gist to the Mercy Hospital; President of the Pittsburg Obstetrical Society, 1892. 524 Penn. Avenue, Pittsburg, Pa.

1900.—BONIFIELD, CHARLES LYBRAND, M.D. Professor of Clinical Gynecology in the Medical College of Ohio; President of the Cincinnati Academy of Medicine, 1900; Gynecologist to the Good Samaritan, Christ's, and to Speer's Memorial Hospitals; formerly President of the Cincinnati Obstetrical Society; Secretary of the Section on Obstetrics and Gynecology, American Medical Association, 1901-4, Chairman, 1905. *Vice-president*, 1907. Residence, corner Washington and Gholson Avenues; Office, 432 West Fourth Street, Cincinnati, Ohio.

1896.—BOSHER, LEWIS C., M.D. Professor of the Principles of Surgery and Clinical Lecturer on Genitourinary Surgery, Medical College of Virginia; Visiting Surgeon to the Old Dominion Hospital; President Southern Surgical and Gynecological Association, 1905. 422 East Franklin Street, Richmond, Va.

Founder.—BOYD, JAMES PETER, A.M., M.D. Professor of Obstetrics, Gynecology and Diseases of Children in the Albany Medical College; Gynecologist to the Albany Hospital; Consulting Obst tric Surgeon to St. Peter's Hospital; Fellow of the British Gynecological Society. 152 Washington Avenue, Albany, N. Y.

1889.—BRANHAM, JOSEPH H., M.D. Professor of Surgery in the Maryland Medical College; Surgeon to the Franklin Square Hospital. 2200 Eutaw Place, corner Ninth Avenue, Baltimore, Md.

1894.—BROWN, JOHN YOUNG, M.D. Professor of Clinical Surgery in Saint Louis University; Chief Surgeon to St. John's Hospital; President of the Mississippi Valley Medical Association, 1898; *Vice-president*, 1905; *President*, 1906; *Executive Council*, 1907. 303 North Grand Avenue, Saint Louis, Mo.

1889.—*BURNS, BERNARD, M.D. Allegheny, Pa., 1892.

1906.—CANNADAY, JOHN EGERTON, M.D. Surgeon in charge Sheltering Arms Hospital. Hansford, W. Va.

Founder.—CARSTENS, J. HENRY, M.D. Professor of Obstetrics and Clinical Gynecology in the Detroit College of Medicine; Gynecologist to the Harper Hospital; Attending Phy-

sician to the Woman's Hospital; Obstetrician to the House of Providence; President of the Detroit Gynecological Society, 1892. *Vice-president*, 1888–89; *President*, 1895; *Executive Council*, 1896–98. 620 Woodward Avenue, Detroit, Mich.

1895.—CHASE, WALTER BENAJAH, M.D. Gynecologist to the Bushwick Hospital; Attending Surgeon and Gynecologist, Central Hospital and Dispensary; Consulting Gynecologist to the Long Island College Hospital; Councilor to the Long Island College Hospital; Fellow of the Brooklyn Gynecological Society (President, 1893); Member Medical Society County of Kings (President, 1892); Permanent Member Medical Society State of New York; Member of the Brooklyn Pathological Society, and Honorary Member of the Queens County Medical Society. *Executive Council*, 1899–1904. 936 St. Marks Avenue, Borough of Brooklyn, New York.

Founder.—CLARKE, AUGUSTUS PECK, A.M., M.D. Dean and Professor of Gynecology and Abdominal Surgery in the College of Physicians and Surgeons, Boston; Vice-president of the American Medical Association, 1896; President f the Gynecological Society of Boston, 1891–92; Vice-president of the Pan-American Medical Congress, Washington, 1893, and of the Pan-American Medical Congress, Mexico, 1896; Honorary President of t e Section of Obstetrics and Gynecology of the Twelfth International Medical Congress, Moscow, Russia, 1897; Member of the Massachusetts Medical Society; Fellow of the American Academy of Medicine; Member of the American Public Health Association. 825 Massachusetts Avenue, Cambridge, Mas·.

1890.—*COLES, WALTER, M.D. Saint Louis, Mo. 1892.

1904.—CONGDON, CHARLES ELLSWORTH, M.D. Gynecologist to the City Hospital for Women. 1034 Jefferson Street, Buffalo, N. Y.

1906.—CRAIG, DANIEL HIRAM, M.D. Surgeon to Out Patients, Free Hospital for Women; Instructor in Gynecology in the Boston Polyclinic. 386 Commonwealth Avenue, Boston, Mass.

1901.—CRILE, GEORGE W., A.M., M.D. Professor of Clinical Surgery in the Western Reserve University Medical College; Surgeon to St. Alexis's Hospital; Associate Surgeon to Lakeside Hospital. *Vice-president*, 1907. 1834 East Sixty-third Street, Cleveland, Ohio.

1894.—CROFFORD, THOMAS JEFERSON, M.D. Professor of Physiology and Clinical Lecturer on Diseases of Women in the Memphis Hospital Medical College; Member of the Southern Surgical and Gynecological Association. *Vice-president*, 1900. 211 North Third Street, Memphis, Tenn.

1905.—CROSSEN, HARRY STURGEON, M.D. Clinical Professor of Gynecology in Washington University; Gynecologist to Washington University Hospital; Associate Gynecologist to Mullanphy Hospital; Consulting Gynecologist to Bethesda, City and Female Hospitals. 4477 Delmar Avenue, Saint Louis, Mo.

1897.—CUMSTON, CHARLES GREENE, B.M.S., M.D. (Genevas Switzerland.) Assistant Professor of Surgical Pathology, Tuft, College Medical School, Boston; Member of the Massachusetts Medical Society; Honorary Member of the Surgical Society of Belgium, and Corresponding Member of the Obstetrical and Gynecological Society of Paris; Corresponding Member of the Association of Genitourinary Surgeons of France; Corresponding Member of the Pathological Society of Brussels, Belgium; Corresponding Member of the Electrotherapeutical Society of France. *Vice-president*, 1902. 871 Beacon Street, Boston, Mass.

Founder.—†*CUSHING, CLINTON, M.D. San Francisco, Cal. 1900. 1904.

1903.—DAVIS, JOHN, D.S., M.D. Professor of Surgery in the Birmingham Medical College; Surgeon to Hillman Hospital; ex-President of Jefferson County Medical Society and of the Board of Health of Jefferson County. Avenue G and Twenty-first Street, Birmingham, Ala.

1889.—*DAVIS, WILLIAM ELIAS B., M.D. Birmingham, Ala. 1903.

1902.—DEAVER, HARRY CLAY, M.D. Visiting Surgeon to the Episcopal, St. Christopher's, and St. Mary's Hospitals. 1534 North Fifteenth Street, Philadelphia, Pa.

1896.—DEAVER, JOHN BLAIR, M.D. Formerly Assistant Professor of Applied Anatomy at the University of Pennsylvania; Visiting Surgeon to the German Hospital. 1634 Walnut Street, Philadelphia, Pa.

1892.—DORSETT, WALTER BLACKBURN, M.D. Professor of Obstetrics and Gynecology in the Marion Sims-Beaumont College of Medicine, Medical Department of Saint Louis University; Gynecologist to the Missouri Baptist Sanitarium, Evangelical Deaconess's Hospital and the Good Samaritan Hospital; Consulting Gynecologist to the Saint Louis City and Female Hospitals. President of the Saint Louis Medical Society, 1892; Pres- of the Missouri State Medical Society, 1900; Chairman of the Section on Obstetrics and Gynecology, American Medical Association, 1907. *Vice-president*, 1898; *President*, 1904; *Executive Council*, 1905-1907. Residence, 5070 Washington Avenue; Office, Linmar Building, corner Washington and Vandeventer Avenues, Saint Louis, Mo.

1889.—†DOUGLAS, RICHARD, M.D. Nashville, Tenn. 1905.

1892.—*DUFF, JOHN MILTON, A.M., M.D., Ph.D. Pittsburg. Pa. 1904.

1895.—DUNN, B. SHERWOOD, M.D. Officier d'Académie; Corresponding Member of the Société Obstétrique et Gynécologique de Paris; Member of the Société Clinique des Praticiens de France, etc. Easton, Pa.

1898.—DUNN, JAMES C., M.D. Obstetrician to Reineman Maternity Hospital. 524 Penn Avenue, Pittsburg, Pa.

1892.—*DUNNING, LEHMAN HERBERT, M.D. Indianapolis, Ind. 1906.

1899.—EASTMAN, THOMAS BARKER, A.B., M.D. Professor of the Medical and Surgical Diseases of Women, Central College of Physicians and Surgeons; Gynecologist to the City Hospital, City Dispensary, and Central Free Dispensary. 331 North Delaware Street, Indianapolis, Ind.

1904.—ELBRECHT, OSCAR H., M.D. Superintendent and Surgeon in charge of the Saint Louis Female Hospital. 5600 Arsenal Street, Saint Louis, Mo.

1906.—ERDMANN, JOHN FREDERICK, M.D. Clinical Professor of Surgery in University-Bellevue Hospital Medical College; Surgeon to Gouverneur, St. Mark's, and Sydenham Hospitals. 60 West Fifty-second Street, New York, N. Y.

1895.—FERGUSON, ALEXANDER HUGH, M.D. Professor of Surgery at the Chicago Post-Graduate Medical School. Suite 300, Reliance Building, 100 State Street, Chicago, Ill.

1903.—FRANK, LOUIS, M.D. Professor of Abdominal and Pelvic Surgery in the Medical Department of Kentucky University; Surgeon to Louisville City Hospital; Surgeon and Gynecologist to the Broadway Infirmary. 229 West Chestnut Street, Louisville, Ky.

1890.—FREDERICK, CARLTON CASSIUS, B.S., M.D. Clinical Professor of Gynecology in the Medical Department of Buffalo University; Obstetrician and Gynecologist to the Buffalo Woman's Hospital; Obstetrician to the Widows' and Infants' Asylum; Gynecologist to the Erie County Hospital. 64 Richmond Avenue, Buffalo, N. Y.

1891.—GIBBONS, HENRY, JR., A.M., M.D. Dean and Professor of Obstetrics and Diseases of Women and Children in Cooper Medical College; Consulting Physician to the French and the Children's Hospitals. 2405 Fillmore Street, San Francisco, Cal.

1902.—GILLETTE, WILLIAM J., M.D. Professor of Abdominal Surgery and Gynecology in the Toledo Medical College; Surgeon to Robinwood Hospital. 1613 Jefferson Street, Toledo, Ohio.

1895.—GOLDSPOHN, ALBERT, M.D. Professor of Gynecology, Post-Graduate Medical School; Senior Gynecologist, German Hospital; Attending Gynecologist, Post-Graduate and Charity Hospitals. *Vice-president*, 1901. Residence, 519 Cleveland Avenue. Office, 34 Washington Street, Chicago, Ill.

1904.—GOODFELLOW, GEORGE E., M.D. Division Surgeon, San Francisco Railroad. 771 Sutter Street, San Francisco, Cal.

1903.—GUENTHER, EMIL ERNEST, M.D. Senior Assistant Gynecologist and Obstetrician to St. Barnabas's Hospital; Attending Surgeon to the German Hospital, Newark. 159 West Kinney Street, Newark, N. J.

1892.—*HAGGARD, WILLIAM DAVID, M.D. Nashville, Tenn. 1901.

1900.—HAGGARD, WILLIAM DAVID, JR., M.D. Professor of Gynecology, Medical Department University of Tennessee; Pro-

fessor of Gynecology and Abdominal Surgery, University of the South (Sewanee); Gynecologist to the Nashville City Hospital; President of the Nashville Academy of Medicine; Secretary of the Section on Diseases of Women and Obstetrics, American Medical Association, 1898; Fellow (and Secretary) of the Southern Surgical and Gynecological Association; Member of the Alumni Association of the Woman's Hospital, N. Y. *Vice-president*, 1904. 148 Eighth Avenue, North, Nashville, Tenn.

1906.—HALL, JOSEPH ARDA, M.D. Clinical Assistant in Gynecology at the Miami Medical College, Cincinnati. 628 Elm Street, Cincinnati, Ohio.

1889.—HALL, RUFUS BARTLETT, A.M., M.D. Professor of Gynecology and Clinical Gynecology at the Miami Medical College; Gynecologist to the Presbyterian Hospital; Member of the British Gynecological Association; of the Southern Surgical and Gynecological Association; of the American Medical Association; of the Ohio State Medical Society (President, 1900); of the Cincinnati Academy of Medicine; President of the Cincinnati Obstetrical Society, 1896. *Vice-president*, 1891; *President*, 1900; *Executive Council*, 1904–1907. Berkshire Building, 628 Elm Street, Cincinnati, Ohio.

1903.—HAMILTON, ALBERT GRANT, M.D. Surgeon in Chief to the Springfield Hospital. Springfield, Neb.

1902.—HAMILTON, CHARLES SUMNER, A.B., M.D. Professor of the Principles of Surgery in Sterling Medical College; Surgeon to Mt. Carmel and the Children's Hospitals. 1 North Fourth Street, Columbus, Ohio.

1894.—HAYD, HERMAN EMIL, M.D., M.R.C.S. Eng. Gynecologist to the Erie County Hospital; Surgeon to the German Hospital. *Vice-president*, 1903. 493 Delaware Avenue, Buffalo, N. Y.

Founder.—*HILL, HAMPTON EUGENE, M.D. Saco, Me. 1894.

1891.—HOLMES, JOSUS BILLINGTON SANDERS, M.D. Professor of Obstetrics in the Southern Medical College; President of the Georgia State Medical Association, 1890; Member of the Southern Surgical and Gynecological Association; Member of the American Medical Association. 17 West Cain Street, Atlanta, Ga.

1891.—HOWITT, HENRY, M.D., M.R.C.S. Eng. Surgeon to the Guelph General and St. Joseph's Hospital, Guelph; Member of the British and Ontario Medical Associations; Medical Health Officer for the City of Guelph. *Vice-president*, 1895. 235 Woolwich Street, Guelph, Ontario, Canada.

1905.—HUGGINS, RALEIGH, R., M.D. Surgeon to St. Francis Hospital. Diamond Building, Fifth Avenue and Liberty Street, Pittsburg, Pa.

1895.—HUMISTON, WILLIAM HENRY, M.D. Associate Professor of Gynecology in the Medical Department of Western Reserve University; Gynecologist in Chief to St. Vincent's Charity Hospital; Consulting Gynecologist to the City Hospital; President of the Ohio State Medical Society, 1898. *Executive Council*, 1902–1903. 275 Bolton Avenue, Cleveland, Ohio.

1898.—HYDE, JOEL W., M.D. Obstetric Surgeon to St. Mary's Hospital; Consulting Obstetrician to the Long Island College Hospital; Consulting Gynecologist to Central Hospital. 215 Schermerhorn Street, Brooklyn, N. Y.

1901.—ILL, CHARLES L., M.D. Surgeon to German Hospital; Assistant Gynecologist to St. Michael's and St. Barnabas's Hospitals; Obstetrician to St. Barnabas's Hospital, Newark; Assistant Gynecologist to all Souls' Hospital, Morristown. 188 Clinton Avenue, Newark, N. J.

Founder.—ILL, EDWARD JOSEPH, M.D. Surgeon to the Woman's Hospital; Medical Director of St. Michael's Hospital; Gynecologist and Supervising Obstetrician to St. Barnabas's Hospital; Consulting Gynecologist to the German Hospital and the Bnoth Israel Hospital of Newark, N. J., to All Souls' Hospital Morristown, N. J., and to the Mountain Side Hospital, Montclair, N. J.; Member of the Southern Surgical and Gynecological Association; Vice-president from New Jersey of the Pan-American Medical Congress of 1893; President of the Medical Society of the State of New Jersey, 1907. *Vice-president*, 1893; *President*, 1899; *Executive Council*, 1901–1903. 1002 Broad Street, Newark, N. J.

1897.—*INGRAHAM, HENRY DOWNER, M.D. Buffalo, N. Y. 1904.

Founder.—*JARVIS, GEORGE CYPRIAN, M.D. Hartford, Conn. 1900.

1894.—JAYNE, WALTER ADDISON, M.D. Professor of Gynecology in the Medical Department of the University of Denver; Consultant in Gynecology, St. Luke's Hospital; Gynecologist to the Arapahoe County Hospital, Denver. 416 McPhee Building, Denver, Col.

1892.—*JELKS, JAMES THOMAS, M.D. Hot Springs, Ark. 1902.

1891.—JOHNSTON, GEORGE BEN, M.D. Professor of Gynecology and Abdominal Surgery in the Medical College of Virginia; Surgeon to the Old Dominion Hospital; Physician to St. Joseph's Female Orphan Asylum; Consulting Surgeon to the City Free Dispensary; Member of the American Surgical Association, (President, 1905); Vice-president of the Southern Surgical and Gynecological Association, 1892 (President, 1897); ex-President of the Richmond Medical and Surgical Society; President of the Virginia State Medical Society, 1897. *Vice-president*, 1897. 407 East Grace Street, Richmond, Va.

1906.—JONAS, ERNST, M.D. Gynecologist to the Saint Louis Jewish Hospital; Surgeon to the Martha Parsons Free Hospital for Children; Instructor in Surgery and Associate Chief in the Surgical Clinic at the Washington University Hospital. 4474 Westminster Place, Saint Louis, Mo.

1902.—KEEFE, JOHN WILLIAM, M.D. Attending Surgeon to the Gynecological Department of St. Joseph's Hospital; Attending Surgeon to the Rhode Island Hospital; Consulting Surgeon to the Providence Lying-in Hospital. 259 Benefit Street, Providence, R. I.

1893.—LAIDLEY, LEONIDAS HAMLIN, M.D. Professor of Gynecology in the Beaumont Hospital Medical College; Surgeon in chief to the Protestant Hospital; Medical Director of the Saint Louis World's Fair of 1904. 3538 Washington Avenue, Saint Louis, Mo.

1898.—LANGFITT, WILLIAM STERLING, M.D. Surgeon in chief to St. John's Hospital. 608 Fulton Building, Sixth Street and Duquesne Way, Pittsburg, Pa.

1901.—LINCOLN, WALTER RODMAN, B.A., M.D. Lecturer on Gynecology, College of Physicians and Surgeons of Cleveland. Lennox Building, corner Erie Street and Euclid Avenue, Cleveland, Ohio.

1900.—LINVILLE, MONTGOMERY, A.B., M.D. Surgeon to Slemango Valley Hospital; Surgeon to three lines of Pennsylvania railways. 35 North Mercer Street, New Castle, Pa.

1890.—LONGYEAR, HOWARD WILLIAMS, M.D. Gynecologist to Harper Hospital; Physician to the Woman's Hospital; President of the Detroit Gynecological Society, 1889; Chairman of the Section on Obstetrics and Gynecology of the Michigan State Medical Society, 1892. *Vice-president*, 1893; *President*, 1905; *Executive Council*, 1906-1907. 271 Woodward Avenue, Detroit, Mich.

Founder.—*LOTHROP, THOMAS, M.D. Buffalo, N. Y. 1902.

1896.—LYONS, JOHN ALEXANDER, M.D. Instructor in Gynecology at the Post-Graduate Medical School; Gynecologist and Lecturer to Nurses at the Chicago Hospital. 4118 State Street, Chicago, Ill.

1901.—MCCANDLESS, WILLIAM A., A.M., M.D. Chief Surgeon St. Mary's Infirmary; Visiting Surgeon to the City Hospital; Professor of Special and Clinical Surgery, Marion Sims-Beaumont College of Medicine. 3857 Westminster Place, Saint Louis, Mo.

1891.—*MCCANN, JAMES, M.D. Pittsburg, Pa. 1893.

1898.—*MCCANN, THOMAS, M.D. Pittsburg, Pa. 1903.

Founder.—MCMURTRY, LEWIS SAMUEL, A.M., M.D. Professor of Gynecology in the Hospital College of Medicine; Gynecologist to Sts. Mary and Elizabeth Hospital; Fellow of the Edinburgh Obstetrical Society; Fellow of the British Gynecological Society; Corresponding Member of the Obstetrical Society of Philadelphia and of the Gynecological Society of Boston; Member (President, 1891) of the Southern Surgical and Gynecological Association; President American Medical Association, 1905. *Executive Council*, 1891-1892, 1895-1905; *President*, 1893. 1912 Sixth Street, Louisville, Ky.

Founder.—MANTON, WALTER PORTER, M.D. Professor of Clinical Gynecology and Adjunct Professor of Obstetrics, Detroit College of Medicine; Gynecologist to Harper Hospital and the Eastern Michigan Asylum for the Insane; Vice-president of Medical Board of the Woman's Hospital and Foundlings' Home; Consulting Gynecologist to the Northern Michigan Asylum and St. Joseph's Retreat; Gynecic Surgeon to the House

of the Good Shepherd; President of the Detroit Academy of Medicine, 1892-1894; President of the Detroit Gynecological Society, 1890; Fellow of the British Gynecological Society; Fellow of the Royal Microscopical Society and of the Zoological Society of London. *Vice-president*, 1894. 32 Adams Avenue, W., Detroit, Mich.

Founder.—†*MAXWELL, THOMAS JEFFERSON, M.D. Keokuk, Iowa. 1902. 1905.

Founder.—MILLER, AARON BENJAMIN, M.D. Professor of Gynecology in the Medical Department of Syracuse University; Gynecologist to St. Joseph's Hospital, House of the Good Shepherd and Dispensary. *Vice-president*, 1899; 1904. 326 Montgomery Street, Syracuse, N. Y.

1905.—MILLER, JOHN, M.D Assistant to the Chair of Clinical Gynecology in the Medical College of Ohio, University of Cincinnati. 432 West Fourth Street, Cincinnati, Ohio.

1896.—*MOONEY, FLETCHER D., M.D. Saint Louis, Mo. 1897.

1904.—MORRIS, LEWIS COLEMAN, M.D. Professor of Gynecology and Abdominal Surgery in the Birmingham Medical College; Secretary, Medical Association State of Alabama, 1904; Member of Jefferson County Board of Health. 714 North Eighteenth Street, Birmingham, Ala.

1890.—MORRIS, ROBERT TUTTLE, A.M., M.D. Professor of Surgery in the New York Post-Graduate Medical School and Hospital. *Vice-president*, 1892; *Executive Council*, 1906; *President*, 1907. 616 Madison Avenue, New York, N. Y.

Founder.—*MOSES, GRATZ ASHE, M.D. Saint Louis, Mo. 1901. (See Honorary Fellows.)

1894.—MURPHY, JOHN BENJAMIN, A.M., M.D. Professor of Surgery in Rush Medical College and in the Post-Graduate Medical College; Attending Surgeon to the Cook County Hospital and to Alexander Hospital. Residence, 3152 Michigan Avenue; Office, 400 Reliance Building, 100 State Street, Chicago, Ill.

Founder.—*†MYERS, WILLIAM HERSCHEL, M.D. Fort Wayne, Ind. 1904. 1907. (See Honorary Fellows.)

1904.—NEWMAN, LOUIS EDWARD, A.M., M.D. President of the Saint Louis Obstetrical and Gynecological Society, 1904. 4040 Washington Boulevard Saint Louis, Mo.

1897.—NICHOLS, WILLIAM R., M.D. 544 Market Street, Winnipeg, Manitoba, Canada.

1896.—NOBLE, GEORGE HENRY, M.D. Gynecologist to the Grady Hospital; Secretary to the Section on Obstetrics and Gynecology of American Medical Association, 1897; Member of the Southern Surgical and Gynecological Association. 131 and 133 South Pryor Street, Atlanta, Ga.

1903.—NOBLE, THOMAS BENJAMIN, M.D. Professor of Abdominal Surgery in the Central College of Physicians and Surgeons; Consultant in the Diseases of Women at the City Hospital, City Dispensary, and Protestant Deaconess's Hospital, Indianapolis. 427 Newton Claypool Building, Indianapolis, Ind.

1889.—†PAINE, JOHN FANNIN YOUNG, M.D. Galveston, Texas. 1904.

1899.—PANTZER, HUGO OTTO, M.D. Professor of Clinical Gynecology in the Indiana Medical College, Medical Department of Purdue University; Gynecologist to City Hospital, City Dispensary, St. Vincent's and Deaconess's Hospitals; Member of Indianapolis, Indiana State, Ohio Valley, Mississippi Valley Medical Associations and Indianapolis Gynecological Association. *Executive Council*, 1907. 224 North Meridian Street, Indianapolis, Ind.

1890.—PEARSON, WILLIAM LIBBY, M.D. 713 Union Street, Schenectady, N. Y.

1899.—PFAFF, ORANGE G., M.D. Adjunct Professor of Obstetrics and Diseases of Women in the Medical College of Indiana; Gynecologist to the City, Deasoness's, and St. Vincent's Hospitals. 1337 North Pennsylvania Street, Indianapolis, Ind.

1898.—PORTER, MILES F., M.D. Professor of Surgery in the Indiana Medical College, Medical Department of Purdue University; Surgeon to Hope Hospital; Ex-President Indiana State Medical Society. *Vice-president*, 1902. 207 West Wayne Street, Fort Wayne, Ind.

Founder.—POTTER, WILLIAM WARREN, M.D. Consulting Gynecologist to the Woman's Hospital; Consulting Surgeon to

the Buffalo General Hospital; President and Examiner in Obstetrics, New York State Medical Examining and Licensing Board; Chairman of Section of Obstetrics and Diseases of Women, American Medical Association, 1890; President of the Buffalo Obstetrical Society, 1884-1886; Member of the Southern Surgical and Gynecological Association; President of the Medical Society of the State of New York, 1891; Executive President of the Section of Gynecology and Abdominal Surgery, First Pan-American Medical Congress (1893). *Secretary*, 1888-1907. 238 Delaware Avenue, Buffalo, N. Y.

1903.—POUCHER, JOHN WILSON, M.D. Consulting Surgeon to Vassar Brothers Hospital, Poughkeepsie. 339 Mill Street, Poughkeepsie, N. Y.

Founder.—PRICE, JOSEPH, M.D. Physician in charge of the Obstetrical and Gynecological Department of the Philadelphia Dispensary; Member of the Southern Surgical and Gynecological Association; Honorary Fellow of the Medical Society of the State of New York; Honorary Fellow of the South Carolina Medical Society; Honorary Fellow of the Virginia Medical Society; Member of the British Gynecological Association and of the Edinburgh Obstetrical Society. *Executive Council*, 1894-1895; *President*, 1896. 241 North Eighteenth Street, Philadelphia, Pa.

1904.—REDER, FRANCIS, M.D. Chief of Clinic, Department of Rectal Diseases, Medical Department of Washington University; Surgeon to Burlington Rink. 4629 Cook Avenue, Saint Louis, Mo.

Founder.—REED, CHARLES ALFRED LEE, A.M., M.D. Professor of Gynecology and Abdominal Surgery in the Cincinnati College of Medicine and Surgery and in the Woman's Medical College of Cincinnati; Surgeon to the Cincinnati Free Surgical Hospital for Women; Secretary-General of the First Pan-American Medical Congress, 1893; Member of the Southern Surgical and Gynecological Society; Fellow of the British Gynecological Society; President of the American Medical Association, 1901. *Executive Council*, 1890-1897; *President*, 1898. Rooms 61 and 62, The Groton, N. E. corner Seventh and Race Streets, Cincinnati, Ohio.

1905.—REES, CHARLES MAYRANT, M.D. Professor of Abdominal Surgery and Gynecology in Charleston Medical School;

Member of the Medical Society of the State of South Carolina; Member of the American Medical Association and of the Southern Surgical and Gynecological Association. Residence, 169 Broad Street; Office, 89½ Wentworth Street, Charleston, S. C.

1896.—*Rhett, Robert Barnwell, Jr., M.D. Charleston, S. C. 1901.

1890.—Ricketts, Edwin, M.D. Professor of Abdominal Surgery and Gynecology at the Cincinnati Polyclinic; Member of the American and British Medical Associations; Member of the Southern Surgical and Gynecological Association. *Vice-president*, 1899; *Executive Council*, 1901, 1904; *President*, 1902. 408 Broadway, Cincinnati, Ohio.

1889.—*Rohé, George Henry, M.D. Baltimore, Md. 1899.

1892.—Rosenwasser, Marcus, M.D. Dean and Professor of Diseases of Women and Abdominal Surgery in the University of Wooster; Gynecologist to the Cleveland Hospital for Women and Children; Consulting Gynecologist to the City Hospital; Member of the American Medical and Ohio State Medical Associations. *Vice-president*, 1903. Residence, 722 Woodland Avenue; Office, 456 Lennox Building, Cleveland, Ohio.

1890.—Ross, James Frederick William, M.D., L.R.C.P., Eng. Gynecologist to the Toronto General Hospital; Surgeon to the Woman's Hospital; Lecturer in Clinical Gynecology at the University of Toronto. *Executive Council*, 1892-1896, 1905-1907; *President*, 1897. 481 Sherbourne Street, Toronto, Ont., Canada.

1902.—Runyan, Joseph Phineas, M.D. Division Surgeon to the Choctaw, Oklahoma and Gulf Railroad; Secretary of the Arkansas State Medical Association, President, 1904. 1514 Schiller Avenue, Little Rock, Ark.

1906.—Ruth, Charles Edward, M.D. Professor of Surgery and Clinical Surgery in the Keokuk Medical College (College of Physicians and Surgeons); Surgeon to the Chicago and Rock Island Pacific Railway. 323 Blondeau Street, Keokuk, Iowa.

1903.—Sadlier, James Edgar M.D. Consulting Surgeon to Highland Hospital, Poughkeepsie. 295 Mill Street, Poughkeeps e, N. Y.

1904.—SCHWARZ, HENRY, M.D. Professor of Obstetrics, Medical Department of Washington University. 440 North Newstead Avenue, Saint Louis, Mo.

1901.—SCOTT, N. STONE, A.M., M.D. Professor of Surgery, College of Physicians and Surgeons, Cleveland; Consulting Surgeon to City Hospital; Consulting Surgeon to St. John's Hospital; Surgeon to the Out-patient Department of Cleveland General Hospital. Residence, 531 Prospect Avenue; Office, 603-604 Citizens' Building, Cleveland, Ohio.

1895.—SELLMAN, WILLIAM ALFRED BELT, M.D. Professor of the Diseases of Women and Children at the Baltimore University School of Medicine; Member of the Medical and Chirurgical Faculty of Maryland; also of the Baltimore Medical and Surgical Association; the Gynecological and Obstetrical Association of Baltimore; the Clinical Society; the Baltimore Journal Club; and of the American Medical Association. 5 East Biddle Street, Baltimore, Md.

1889.—* SEYMOUR, WILLIAM WOTKYNS, A.B., M.D. Troy, N. Y. 1904.

1902.—SIMONS, MANNING, M.D. Professor of Clinical Surgery in the Medical College of the State of South Carolina; Surgeon to St. Francis Xavier's Infirmary and to the City Hospital. 22 Rutledge Avenue, Charleston, S. C.

1899.—SIMPSON, FRANK FARROW, A.B., M.D. Assistant Gynecologist to Mercy Hospital; *Vice-president*, 1906. 1112 Bessemer Building, Pittsburg, Pa.

1901.—SKEEL, ROLAND EDWARD, M.D. Professor of Obstetrics in Cleveland College of Physicians and Surgeons; Consulting Obstetrician to the City Hospital; Obstetrician to the Cleveland General Hospital. 785 Prospect Street, Cleveland, Ohio.

1891.—SMITH, CHARLES NORTH, M.D. Professor of Obstetrics and Clinical Gynecology in the Toledo Medical College; Gynecologist to St. Vincent's Hospital. 234 Michigan Street, Toledo, Ohio.

1904.—SMITH, WILLIAM S., M.D. Professor of Gynecology in the Maryland Medical College; Gynecologist to Franklin Square Hospital. 330 North Charles Street, Baltimore, Md.

1901.—STAMM, MARTIN, M.D. Professor of Operative and Clinical Surgery in the College of Physicians and Surgeons, Cleveland. 316 Napoleon Street, Fremont, Ohio.

1902.—STARK, SIGMAR, M.D. Professor of Obstetrics and Clinical Gynecology in the Cincinnati College of Medicine and Surgery; Gynecologist to the Jewish Hospital. 1108 East McMillan Street, Cincinnati, Ohio.

Founder.—*STORRS, MELANCTHON, A.M., M.D. Hartford, Conn. (See Honorary List, 1899.) 1900.

1904.—SUTCLIFFE, JOHN ASBURY, A.M., M.D. Consulting Surgeon to St. Vincent's Infirmary; Consultant in Genitourinary Diseases to the City Hospital and to the Protestant Deaconess's Hospital. 824 North Delaware Street, Indianapolis, Ind.

1899.—SWOPE, LORENZO W., M.D. Surgeon to the Consolidated Traction Company; Chief Surgeon to Wabash Railroad, Pittsburg Division; Surgeon to Western Pennsylvania Hospital; Surgeon to Passavant Hospital; Member of the Allegheny County Medical Society; Member of the American Medical Association. Residence, 4629 Bayard Street; Office, 1105 Park Building, Pittsburg, Pa.

1901.—TATE, MAGNUS ALFRED, M.D. Professor of Diseases of Children and Embryology at the Cincinnati College of Medicine and Surgery; President Cincinnati Academy of Medicine, 1905. 19 West Seventh Street, Cincinnati, Ohio.

Founder.—†TAYLOR, WILLIAM HENRY, M.D., Ph.D. Cincinnati, Ohio. 1898. (See Honorary Fellows.)

1895.—THOMPSON, FRANK DANIEL, M.D. Professor of Gynecology in the Medical Department of Fort Worth University. 412 Adams Street, Forth Worth, Texas.

Founder.—*TOWNSEND, FRANKLIN, A.M., M.D. Albany, N. Y. 1895.

Founder.—VANDER VEER, ALBERT, A.M., M.D., Ph.D. Professor of Didactic, Clinical, and Abdominal Surgery in the Albany Medical College; Attending Surgeon to the Albany Hospital; Consulting Surgeon to St. Peter's Hospital; Fellow of the American Surgical Association (President, 1906); Fellow of the British Gynecological Society; Member of the Southern Surgical

and Gynecological Association; Corresponding Member of the Boston Gynecological Society. *Executive Council*, 1889-1891, 1895-1905; *President*, 1892. 28 Eagle Street, Albany, N. Y.

1891.—WALKER, EDWIN, M.D., Ph.D. Gynecologist to the Evansville City Hospital; President of the Indiana State Medical Society, 1892; Member of the American Medical Association and of the Mississippi Valley Medical Association; Member of the Southern Surgical and Gynecological Association; First Vice-president American Medical Association, 1907. *Vice-president*, 1901. 712 Upper Fourth Street, Evansville, Ind.

1889.—WENNING, WILLIAM HENRY, AM.., M.D. Clinical Professor of Gynecology at the Miami Medical College; Chief of Staff and Gynecologist to St. Mary's Hospital. 5 Garfield Place, Cincinnati, Ohio.

Founder.—WERDER, XAVIER OSWALD, M.D. Professor of Gynecology at the Western Pennsylvania Medical College (Medical Department, University of Western Pennsylvania); Consulting Gynecologist at the Allegheny General Hospital; Gynecologist to the Mercy Hospital and Pittsburg Free Dispensary; Obstetrician to the Roselia Maternity Hospital; Consulting Gynecologist to St. Francis's Hospital; Consulting Surgeon to the South Side Hospital. *Treasurer*, 1888-1907. 524 Penn Avenue, Pittsburg, Pa.

1904.—WEST, JAMES NEPHEW, M.D. Professor of Diseases of Women and Secretary of the Faculty at the New York Post-Graduate Medical School and Hospital. *Vice-president*, 1906. 71 West Forty-ninth Street, New York.

1896.—WESTMORELAND, WILLIS FOREMAN, M.D. Professor of Surgery at the Atlanta Medical College. Equitable Building, Atlanta, Ga.

1897.—WHITBECK, JOHN F. W., M.D. Gynecologist to the Rochester City Hospital; Commissioner of the Board of Health. 322 East Avenue, Rochester, N. Y.

1900.—ZINKE, ERNST GUSTAV, M.D. Professor of Obstetrics and Clinical Midwifery in the Medical College of Ohio, University of Cincinnati; Obstetrician and Gynecologist to the German Hospital; Obstetrician to the Maternity Hospital. 13 Garfield Place, Cincinnati, Ohio.

Total, one hundred and twelve Ordinary Fellows.

MINUTES OF THE PROCEEDINGS

AT THE

NINETEENTH ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS

HELD AT THE

HOTEL HAVLIN, CINCINNATI

SEPTEMBER 20, 21 AND 22, 1906

NINETEENTH ANNUAL MEETING

SEPTEMBER 20, 21 AND 22, 1906

The following-named Fellows were present:

ABRAMS, EDWARD T.	DOLLAR BAY.
BALDWIN, JAMES F.	COLUMBUS.
BLUME, FREDERICK	PITTSBURG.
BONIFIELD, CHARLES L.	CINCINNATI.
BROWN, JOHN YOUNG	ST. LOUIS.
CARSTENS J. H.	DETROIT.
CONGDON, CHARLES E.	BUFFALO.
CRILE, GEORGE W.	CLEVELAND.
DORSETT, WALTER B.	ST. LOUIS.
ELBRECHT, OSCAR H.	ST. LOUIS.
ERDMANN, JOHN P.	NEW YORK.
GUENTHER, E. E.	NEWARK.
HALL, RUFUS B.	CINCINNATI.
HAYD, HERMAN E.	BUFFALO.
HUGGINS, R. R.	PITTSBURG.
KEEFE, JOHN W.	PROVIDENCE.
LINVILLE, MONTGOMERY	NEW CASTLE.
LONGYEAR, H. W.	DETROIT.
McMURTRY, LEWIS S.	LOUISVILLE.
MILLER, AARON B.	SYRACUSE.
MILLER, JOHN	CINCINNATI.
MORRIS, ROBERT T.	NEW YORK.
MURPHY, JOHN B.	CHICAGO.
NOBLE, THOMAS B	INDIANAPOLIS.
PANTZER, HUGO O.	INDIANAPOLIS.
PORTER, MILES F.	FORT WAYNE?
POTTER, WILLIAM W.	BUFFALO.
PRICE, JOSEPH	PHILADELPHIA.
REED, CHARLES A. L	CINCINNATI.
RICKETTS, EDWIN	CINCINNATI.
ROSENWASSER, MARCUS	CLEVELAND.
ROSS, JAMES F. W.	TORONTO.
SADLIER, JAMES E.	POUGHKEEPSIE.

SCOTT N. STONE	CLEVELAND.
SELLMAN, W. A. B.	BALTIMORE.
STARK, SIGMAR	CINCINNATI.
SUTCLIFFE, J. A.	INDIANAPOLIS.
TATE, MAGNUS A.	CINCINNATI.
TAYLOR, WILLIAM H.	CINCINNATI.
WALKER, EDWIN	EVANSVILLE.
WERDER, XAVIER O.	PITTSBURG.
WENNING, WILLIAM H.	CINCINNATI.
WRIGHT, ADAM H.	TORONTO.
ZINKE, E. GUSTAV	CINCINNATI.

Letters or messages of regret were received from the following-named Fellows:

Honorary.—A. E. Cordes, Geneva; William Alexander Freund, Berlin; Joseph McDowell Mathews, Louisville; Bernard Sigmund Schultze, Jena; Sir William Japp Sinclair, Manchester; General George Miller Sternberg, Washington; Surgeon-General Walter Wyman, Washington.

Corresponding.—G. Crozel, Collonges au Mont d'Or (Rhone); Guilherme Ellis, S. Paulo, Brazil; Horace Manley Lane, S. Paulo, Brazil.

Ordinary.—Samuel W. Bandler, Lewis C. Bosher, Walter B. Chase, Augustus P. Clarke, Charles G. Cumston, John D. S. Davis, Alexander Hugh Ferguson, Henry Gibbons, Jr., William D. Haggard, Henry Howitt, William H. Humiston, William S. Langfitt, John A. Lyons, Walter P. Manton, Louis E. Newman, Francis Reder, Henry Schwarz, William S. Smith, Frank D. Thompson, Albert Vander Veer.

Upon recommendation of the Executive Council the following-named physicians were invited to attend the sessions as members by invitation:

Ayres, S. C.	Cincinnati.
Beebe, B. F.	"
Buckner, James H.	"
Carothers, Robert	"
Crotty, Nora	"
Curry, E. A.	"
Fihe, C. C.	"
Gippert, J. P.	"
Harlan, Earl	"
Hiller, Carl	"

Hocker, Elizabeth	Cincinnati.
Iliff, Francis H.	"
Iliff, Charles E. J.	"
Iglauer, S.	"
Johnston, J. A.	"
McKee, E. S.	"
Malsburg, George S.	"
Marsh, F. O.	"
Moss, Edward H	"
Nelson, W. T.	"
Palmer, Chauncey D.	"
Podesta, Joseph	"
Ratterman, F. L.	"
Ransohoff, Joseph	"
Reilly, W. E.	"
Renneker, A. P.	"
Ricketts, B. Merrill	"
Rowe, James W.	"
Souther, Charles T.	"
Stanton, Byron	"
Smith, E. Otis	"
Whithrow, J. M.	"
Zwick, A. O.	"
Beckett, J. B.	Covington, Ky.
Alcom, Edward	Hustonville, Ky.
Bullett, James B.	Louisville.
Bowers, L. G.	Richmond, Ind.
Brown, William M.	Rochester.
Bramner, J. Kelley	California, O.
Death, H. J.	Franklin, O.
Evans, Charles	Springfield, O.
Foster, S. D.	Toledo. O.
Freemark, E. D.	Osgood. Ind.
Gillespie, Paul	Wyoming, O.
Graham, Hannah M	Indianapolis.
Grant, H. H.	Louisville.
Hanig, Herbert C.	Dayton. O.
Hendy, James F.	Glendale, O.
Hecht, John R.	Somerville, N. J.
Herndon, G. A.	Louisville.
Hough, Charles A.	Lebanon, O.

Houghton, R. E.	Richmond, Ind.
Huston, Edwin M.	Dayton, O.
Jones, Arthur T.	Providence.
Mattison, James A.	Marion, Ind.
O'Neill, O. W.	Tronto, O.
Schoolfield	Charleston, W. Va.
Sutton, H. L.	Zanesville, O.
Vance, Ap Morgan	Louisville.
Wathen, John R.	Louisville.
Wathen, William H.	"

FIRST DAY—*Thursday, September* 20, 1906.

Morning Session.—The Association met at The Hotel Havlin at 9:30, and was called to order by the President, Dr. John Young Brown, Saint Louis.

The President, introduced Dr. Charles A. L. Reed, Cincinnati, who delivered an Address of Welcome.

REPORT OF COMMITTEE OF ARRANGEMENTS.

Dr. Charles L. Bonifield, Chairman of the Local Committee of Arrangements, made a brief oral report, stating that the Committee had arranged for an informal smoker to be given at The Hotel Havlin on Thursday evening. He also called attention to the annual dinner of the Association, saying that it would be served at The Hotel Havlin.

Papers were then read as follows:

1. "Kidney and Colon Suspension by the Nephrocolic Ligament and Gerota's Capsule," by Howard W. Longyear, Detroit.

2. "Fixation of the Kidney in Shortening of the Nephrocolic Ligament, with Report of Cases," by Charles A. L. Reed, Cincinnati.

3. "The Technic of Kidney Fixation," by J. Henry Carstens, Detroit.

These three papers were discussed jointly by Drs. Hayd, Harlan, Baldwin, Murphy, Price, and in closing by Drs. Longyear, Reed and Carstens.

4. "Porro-Cesarean Section for Pregnancy with Complicating Fibroids," by James F. Baldwin, Columbus.

5. "Uterine Fibroids Complicating Pregnancy," by Marcus Rosenwasser, Cleveland.

These two papers were discussed jointly by Drs. Zinke, Elbrecht, Guenther, Morris, Price, Ill, Blume, Pantzer, Carstens, and in closing by the essayists.

On motion, the Association then took a recess until 2:30 P.M.

Afternoon Session, 2:30 o'Clock.

The President in the Chair.

6. "Abdominal Section for Trauma of the Uterus," by Charles E. Congdon, Buffalo.

Discussed by Drs. Walker, Hall, Baldwin, Dorsett, Graham (by invitation), Brown, and the discussion closed by the essayist.

7. "The Rectum in Its Relations to Diseases of Women," by H. O. Pantzer, Indianapolis.

Discussed by Drs. Sellman, Congdon, and in closing by the essayist.

Dr. William M. Brown, Rochester, by invitation, reported a case and exhibited specimen of absence of lung in a child, with deformed heart, etc.

Dr. James F. W. Ross, Toronto, reported a case of twisting of the Fallopian tube with gangrene, without any implication of the ovary.

Dr. James F. Baldwin, Columbus, reported a case similar in some respects to the one detailed by Dr. Ross.

On motion, the Association took a recess until 9:30 A.M., Friday.

SECOND DAY—*Friday, September 21, 1906*

Morning Session.—The Association met at 9:30, A.M., with the President in the Chair.

8. "Trend of the Times in Appendectomy," by N. Stone Scott, Cleveland.

9. "Points Commonly Contested in the Diagnosis and Treatment of Appendicitis," by Joseph Price, Philadelphia.

These two papers were discussed jointly by Drs. Murphy, Morris, Carstens, McMurtry, Reed, Ross, Wathen (by invitation), Hayd, Pantzer, Rosenwasser, Linville, Vance, Brown (Wm. M. by invitation), and in closing by Dr. Price.

At this juncture the First Vice-president, Dr. James N. West, New York, took the Chair, and the President, Dr. John Young Brown, Saint Louis, delivered his address. He selected for

his subject "The Diagnosis and Surgical Treatment of Injuries of the Diaphragm."

The President expressed the wish that his Address be discussed.

The Address was discussed by Drs. Murphy, Crile, Erdmann, Price, and the discussion closed by Dr. Brown.

On motion of Dr. Hall, Cincinnati, a vote of thanks was extended to the President for his scholarly and instructive Address.

The Association then took a recess until 2:30 P.M.

Afternoon Session, 2:30 o'Clock.

The President in the Chair.

10. "Reflex Dyspepsias from Abdominal and Pelvic Disease, and their Surgical Treatment," by Herman E. Hayd, Buffalo.

Discussed by Drs. Harlan (by invitation), Morris, Ricketts, Dorsett, Longyear, Hall, Carstens, Murphy, Price, and in closing by the essayist.

11. "Intestinal Obstruction Due to Gallstones," by Miles F. Porter, Fort Wayne.

Discussed by Drs. Vance, Pantzer, and in closing by the essayist.

12. "Accidental Hemorrhage," by Adam H. Wright, Toronto.

Discussed by Drs. Porter, Elbrecht, Stark, Dorsett, Zinke, and in closing by the essayist.

13. "Diffuse Suppurative Peritonitis," by John B. Murphy, Chicago.

Discussed by Drs. Ross, Porter, Price, Brown, Baldwin, and in closing by the essayist.

On motion, the Association took a recess until 9:30 A.M., Saturday.

THIRD DAY—*Saturday, September 22, 1906.*

Morning Session.—The Association met at 9:30 A.M., with Dr. West, the First Vice-president, in the Chair.

14. "Abuse of Purgatives," by Edwin Walker, Evansville.

Discussed by Drs. Price, Brown, Elbrecht, Linville, Pantzer, Ricketts, and in closing by the essayist.

15. "Consideration of the Factors that have Lowered Operative Mortality and Produced Better Post-operative Results," by X. O. Werder, Pittsburg.

Discussed by Drs. Hayd, West, Ill, Price, Stark, Elbrecht, Pantzer, and in closing by the essayist.

16. "Management of Bowel of Doubtful Vitality in Operations for the Relief of Strangulated Hernia and Intestinal Obstruction," by Rufus B. Hall, Cincinnati.

Discussed by Dr. Erdmann.

Dr. Charles L. Bonifield, Cincinnati, reported an unusual case of ectopic pregnancy, and exhibited both mother and child.

On motion, the Association took a recess until 2:30 o'clock.

Afternoon Session, 2:30 o'Clock.

The President in the Chair.

17. "Peritoneal Adhesions," by Robert T. Morris, New York.

Discussed by Dr. Ricketts.

18. "The Utilization of the Broad Ligaments in Suprapubic Hysterectomy," by Walter B. Dorsett, St. Louis.

Discussed by Drs. Bonifield, Brown, Hayd, Ricketts, Erdmann, and in closing by the essayist.

Dr. John Young Brown, St. Louis, exhibited two interesting specimens, one of diaphragmatic hernia, and the other of ruptured ectopic pregnancy.

Dr. Hugo O. Pantzer, Indianapolis, delivered a Memorial Address on the Life and Character of Dr. Lehman H. Dunning.

The Secretary presented the following resolutions, which were unanimously adopted:

Resolved, That the thanks of this Association be and are hereby tendered to the Chairman of the Committee of Arrangements, Dr. Charles L. Bonifield; to the Secretary of the Committee, Dr. M. A. Tate, and their associates, for the splendid manner in which they have provided for the convenience and comforts of the members during the nineteenth annual meeting just now closing.

Resolved, That our thanks are also due and are hereby tendered to Mr. James T. Clyde, Manager of The Hotel Havlin, for the many courtesies he has shown the members, individually and collectively, during our sojourn in Cincinnati.

The retiring President, Dr. Brown, expressed his personal gratitude to the Fellows for the splendid meeting over which he had

presided. He considered it one of the best he had ever attended, and said its success was largely due to the Secretary, Dr. Potter, who had been tireless in his efforts to make it a good and interesting meeting.

The President and First Vice-president-elect being absent, Dr. Charles L. Bonifield, Second Vice-president-elect, was escorted to the Chair and installed as presiding officer.

On motion of Dr. Rufus B. Hall, a vote of thanks was extended to the Secretary for his conscientious and tireless work in behalf of the Association.

Dr. Potter said he appreciated most heartily the kind words regarding his work as Secretary, but most of all he appreciated the cordial support of every Fellow that he had received, and especially from the local committee of arrangements, which meant so much toward the success of the meeting.

On motion, the Association then adjourned.

WILLIAM WARREN POTTER,
Secretary.

EXECUTIVE SESSIONS.

Thursday, September 20, 1906.

The President, Dr. John Young Brown, in the Chair.

On behalf of the Executive Council, the Secretary presented a list of applicants for Fellowship, after which the Association elected by ballot the following-named candidates:

Daniel H. Craig	Boston, Mass.
John F. Erdmann	New York City.
Joseph A. Hall	Cincinnati, Ohio.
Chas. E. Ruth	Keokuk, Iowa.
Ernst Jonas, ...	Saint Louis, Mo.
John E. Cannaday	Hansford, W. Va.

The Secretary presented the accounts of the Secretary and Treasurer for auditing, and moved that the President appoint an Auditing Committee.

The President thereupon appointed Drs. Sadlier and Sellman to audit the accounts.

The Secretary presented a letter from the International Medical Association of Mexico, asking that delegates be sent

to its meeting, to be held in November, and said he had in reply courteously asked them to send delegates to the present meeting of the American Association of Obstetricians and Gynecologists.

On motion, the course pursued by the Secretary in reference to this matter was concurred in.

Adjourned.

Friday, September 21, 1906.

The Executive Session was called to order by the President, immediately after the adjournment of the scientific session.

The Auditing Committee reported having examined the accounts of the Secretary and Treasurer, and had found them correct, with a balance of $95.05 in the treasury.

On motion, the report was accepted and adopted.

The election of officers resulted as follows:

President, Robert T. Morris, New York; First Vice-president, George W. Crile, Cleveland; Second Vice-president, Charles L. Bonifield, Cincinnati; Secretary, William Warren Potter (re-elected), Buffalo; Treasurer, X. O. Werder (re-elected), Pittsburg.

To fill vacancies in the Executive Council: Hugo O. Pantzer, Indianapolis, to take the place vacated by the death of Dr. Dunning; Rufus B. Hall, Cincinnati (three years), and John Young Brown, Saint Louis, to fill the place vacated by Dr. Morris.

On motion of Dr. L. S. McMurtry, the time and place of meeting were left to the Executive Council, to be announced later. [Subsequently the Executive Council by vote, selected Detroit, September 17, 18, 19, 1907, as the place and time of the next annual meeting.]

Dr. James F. W. Ross, Toronto, moved that all papers which were not read be read by title and published in the "Transactions," which was duly seconded and carried.

As there was no other business to come before the meeting, the Executive Session then adjourned.

WILLIAM WARREN POTTER,
Secretary.

PAPERS

READ AT THE

NINETEENTH ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS,

HELD AT THE

HOTEL HAVLIN,

Cincinnati, Ohio,

SEPTEMBER 20, 21 and 22, 1906.

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THE PRESIDENT'S ADDRESS

THE DIAGNOSIS AND SURGICAL TREATMENT OF INJURIES TO THE DIAPHRAGM.

BY

JOHN YOUNG BROWN, M. D.,

St. Louis.

In electing me to the presidency of the American Association of Obstetricians and Gynecologists, you have conferred upon me a distinguished honor, for which I feel profoundly grateful.

I have chosen for the subject of this address, "The Diagnosis and Surgical Treatment of Injuries to the Diaphragm." In discussing this question, I wish to confine myself to a consideration of those cases in which the damage to this muscle is the direct result of trauma. Such injuries are far more frequent than is generally supposed, and they give a mortality which proves conclusively, that their early recognition and prompt surgical treatment has not received the attention from the profession that its importance demands.

The German, English, and American textbooks all advise that, unless there are special indications present, and those indications are given as active hemorrhage from the internal mammary or intercostal arteries, penetrating wounds of the chest should be left alone. In wounds of this character, involving the upper thorax, such advice is sound; but in wounds below the seventh rib, the possibility of injury to the diaphragm, with associated damage to the abdominal viscera, should always be carefully considered.

Concerning the diagnosis and treatment of these injuries, our textbooks teach little, and with the exception of a few cases scattered through the literature, most of our knowledge of such wounds has been obtained at the autopsy table. Liechternstern collected two hundred and fifty cases of traumatic diaphragmatic hernia. In only five of these was the diagnosis

made before death, and as diaphragmatic hernia, unassociated with injury to the abdominal viscera, is a most favorable condition for surgical interference, it is reasonable to assume that many of these cases could have been saved had early operation been undertaken.

A number of cases have been recorded where, at autopsy, the stomach, with a part of the large and small bowel, has been found in the pleural cavity uninjured, the patients dying as the result of acute strangulation. The surgical treatment of such cases should give a comparatively low mortality.

Enumerated in the order of their frequency, injury to the diaphragm is generally the result of (1) penetrating stab wounds, (2) penetrating gunshot wounds, and (3) severe abdominal contusions.

In two hundred and sixteen cases of penetrating gunshot and stab wounds of the chest coming under the personal care of the writer and his assistant, Dr. Walter Kirchner, we have operated for injury to the diaphragm, associated with damage to the abdominal viscera, eight times. Five of these cases were the result of penetrating stab wounds of the chest and abdomen, two of penetrating gunshot wounds of the chest and abdomen, and one due to severe abdominal contusions. Ot the eight cases, four died and four recovered.

In two of the fatal cases (one a stab wound, penetrating chest, diaphragm and stomach; and one, a gunshot wound of chest, perforating diaphragm and stomach), the diagnosis was not made until widespread peritonitis had developed. One (a stab wound of chest, diaphragm and stomach) died on the second day. Autopsy showed no peritonitis, stomach wound completelv sealed, considerable inflammatory changes in pleural cavity. In one (a stab wound of chest and diaphragm, complicated by an old diaphragmatic hernia), death was due to shock a few hours after patient left the operating table.

In the four cases that recovered, the following conditions were found at operation:

CASE I.—Penetrating stab wound of left chest and diaphragm, small wound of spleen, prolapse of small bowel and omentum in pleural cavity. Laparotomy. Thoractomy. Suture of diaphragm.

CASE II.—Severe abdominal contusion. Rupture of liver, spleen and diaphragm. Suture of liver. Splenectomy. Wound in diaphragm not repaired.

CASE III.—Penetrating gunshot wound of chest, perforating diaphragm, prolapse of omentum, and small bowel into pleural cavity. Laparotomy. Thoractomy. Suture of diaphragm. Recovery.

CASE IV.—Penetrating stab wound of chest, penetration of diaphragm, and injury to left kidney. Thoractomy. Suture of kidney and diaphragm. Recovery.

These cases present many interesting and important points, which I will endeavor to bring out in the course of this article.

Simple wounds of the diaphragm are not in themselves dangerous. Many cases, doubtless, recover without operation. Especially is this true of wounds of the right side, where the liver acts as a barrier against hernia. It is, however, not the injury to the diaphragm that is important, but the associate damage to abdominal viscera and the possibility in every case of diaphragmatic hernia with resulting obstruction. If we will consider that in all such cases we have to deal not only with a penetrating wound of the chest, but a penetrating and possibly perforating wound of the abdomen as well, the importance of early diagnosis and prompt surgery at once becomes apparent. In many of these cases, a correct diagnosis of the extent of the injury is arrived at with the greatest difficulty. That this is true the following cases clearly show.

CASE I.—A well-developed, well-nourished woman of eighteen years, weighing about one hundred and sixty-five pounds, was admitted to the City Hospital on February 16, at 8.55 P.M. She stated that she had partaken of a rather hearty supper, of which corned-beef hash was the principal dish; that it had made her a "little sick," and that she was lying on a couch when her drunken husband entered, and, standing over her, fired several shots into her body.

On admission to the hospital her condition was as follows: There was no pallor nor cyanosis, lips red. She was cheerful, complained of some little pain at wound of arm and at site of injury to back. Pulse 84, respiration 26, temperature normal. She vomited her supper, which was but little digested, and remarked that she felt considerably better. There was no blood in the vomitus. (I wish to call especial attention to this point.)

Physical Examination.—As noted on the records, the history revealed the following: In the lower abdomen was a palpable, gravid uterus, abdominal walls soft, no tenderness, flanks not

dull, liver margin not palpable, and dulness apparently normal. Spleen not palpable, but dulness seemed somewhat increased. Chest well developed, expansion good and equal. Breath sounds normal, no areas of dulness. Pulse regular, equal tension, and volume good, rate 84. Apex beat about three inches to left of nipple line in fifth space.

Nervous System.—As noted. "Shock seems but a small factor here. She is in good spirits, stands examination of wounds exceptionally well."

Her wounds were as follows: On the right side of chest, about three and one-half inches to the left and about one and one-half inches above the nipple, was a small bullet wound with smooth margins, while about one-half inch below and to the outside of the nipple was a smaller wound. A probe showed wounds to be connected. At about the sixth rib, and a little to the left of the nipple line, on the left side, was a small, smooth-margined bullet wound; direction could not be determined. Wound enlarged, and little finger introduced, but direction of wound could not be ascertained. There was but little hemorrhage. Posteriorly at about the sixth rib and about two inches to left of the vertebral column, was visible a palpable tumefaction, firm and hard. On deep palpation a bullet could be outlined. This was cut down upon and removed. Wound enlarged; direction not made out. No fracture of rib evident. Some pain at this point. Wound was dressed in the usual manner, chest strapped, patient put to bed, and ordered to be kept quiet.

The nurse was instructed to watch the case carefully, and to report any changes that might occur in respiration, pulse, or temperature. Diagnosis: Gunshot of right breast, penetrating wound of left chest, left forearm, and right arm.

After midnight she became somewhat restless. Pulse 102, respirations 32, temperature 99.8°. At 6 o'clock she was seen, and the following noted: Pulse 106, respirations 32, temperature 100.6°. She was resting quietly, and said she felt "fine," although she had just vomited a quantity of light-green fluid, containing some undigested food, but no blood. There was some tenderness in upper abdomen, no marked muscular rigidity, some pain in left chest. Diagnosis was made of penetrating gunshot of left chest and abdomen with possible perforation of stomach. She was immediately prepared, and sent to operation.

Operation.—Abdomen opened through left rectus muscle. Diffuse peritonitis present. Wound in diaphragm, two wounds in cardiac extremity of stomach. Wounds in stomach repaired and silk suture of diaphragm made through thorocolotomy wound. Irrigation of general peritoneal cavity. Rubber drain. Wound closed with silkworm gut.

Death second day from peritonitis.

CASE II.—A well-nourished, muscular negro, twenty-eight years old, was admitted to the St. Louis City Hospital, with a penetrating stab wound of the chest, which he had received in a drunken brawl one hour prior to admission. When examined at the hospital, his temperature was 98°, pulse 86, respirations 24. He complained of some pain in left chest. Examination of chest negative. There was comparatively no shock, and to all appearances his wound was a simple one. The wound was located between the seventh and eighth ribs, in the anterior axillary line. Examination of the abdomen negative. Voided urine without difficulty; urine clear.

Diagnosis: Simple penetrating wound of chest. Wound was sealed, and chest strapped. Twelve hours after admission, patient showed unmistakable signs of beginning peritonitis. He was immediately prepared for operation.

Operation.—Abdomen opened through four-inch incision in left rectus. Widespread peritonitis present. Wound in diaphragm found one and one-half inches in length, plugged with omentum. Large wound in cardiac end of stomach, through which stomach contents had freely escaped. Wound in stomach and diaphragm repaired. Irrigation of general peritoneal cavity with hot normal salt solution. Drainage tube inserted in viscerorectal pouch through stab wound above pubis. Abdominal wound closed with through-and-through silkworm gut sutures. Death sixteen hours later from peritonitis.

While an absolute diagnosis in the majority of cases is difficult, if not impossible, without exploration, as the foregoing cases conclusively show, in some cases the diagnosis is arrived at with the greatest ease. To illustrate:

A young man, twenty-four years old, a watchman by occupation, entered the hospital with a penetrating stab wound of the chest. Wound situated in left chest between ninth and tenth ribs, in the midaxillary line. On examination, omentum was found protruding from chest wound. On introducing finger through wound in chest, a wound in the diaphragm

through which small bowel had prolapsed could be plainly felt. patient was immediately prepared for operation.

Operation.—The abdomen was opened through the outer portion of left rectus muscle by an incision four inches long. A small wound in spleen was found. No other injury to abdominal viscera. Two inches of tenth rib resected; wound in diaphragm sutured with catgut. Wound in chest closed. Patient made a prompt recovery.

In a case operated on by my assistant, Dr. Kirchner, and reported by him (*Inter-State Medical Journal*, Aug., 1906), an old diaphragmatic hernia was found associated with a recent wound of the diaphragm. This complication made the diagnosis exceedingly difficult. The injuries found at operation on this patient were very interesting, and as I am able to present the specimen, which shows beautifully the diaphragmatic hernia, I will report it at length.

Patient, a white male, thirty-five years of age, of medium stature, had received a stab wound of the lower portion of the chest in the mammary line. When he was received at the hospital there was no radial pulse, both pupils were dilated, the breathing was stertorous, and he was anemic, cold, and in shock. Pressure over the abdomen was painful. There was evidence of severe intraabdominal hemorrhage.

After the usual preparation, under general anesthesia, the incision was enlarged downward, and it was found that the penetrating instrument had severed three ribs in the mammary line, cutting through the costal margin. The abdominal cavity was filled with blood, the spleen was slightly injured, but did not bleed much. The gastrocolic ligament was severed, and there was active hemorrhage from two vessels. These vessels were ligated. The omentum was not in its normal position, but instead was adherent to the diaphragm. On further examination, an opening through which the finger could be inserted was found through the diaphragm. An incision was made in the mid-axillary line through the chest wall, and by exploring by the pleural and abdominal routes, a mass about the size of a pear could be felt in the pleural cavity. The omentum had ascended through an opening in the diaphragm into the pleural cavity, where it was confined in a sac. The hernia could not be reduced. A rubber drain was placed in the pleural cavity. The abdominal wound was closed with silkworm gut sutures.

The patient rallied somewhat after the operation, and remained conscious sufficiently long to state that he had on a previous occasion been stabbed in the chest. At autopsy the specimen of diaphragmatic hernia which I present was obtained. The hernial sac was 8 x 5 cm., and contained a great portion of the omentum, which had become adherent to the neck of the sac. The ring would easily admit the finger. It is probable that the diaphragm was only partially cut through at the time of the first injury, and that this so weakened the structure that the hernia resulted, in which the sac was formed by the peritoneal layer.

In operating for acute abdominal injuries unassociated with open wounds of the chest or abdomen, damage to the diaphragm is occasionally found. In the following complicated case, the wound of the diaphragm, situated in the dome of this muscle, well protected by the liver, was located by a distinct blowing sound accompanying respiration. The patient, a stout laborer, was admitted to the City Hospital with the following history:

Shortly before admission, he was run down by a wagon, the wheels of which passed over his body on a level with his ribs. Patient was profoundly shocked, complained of great abdominal pain, abdominal muscles rigid, dulness in both flanks. A diagnosis of intestinal hemorrhage probably due to ruptured liver was made. Patient was quickly prepared for operation.

The abdomen was opened through a median incision below the umbilicus. Peritoneal cavity was filled with blood. Examination of liver revealed an extensive rupture of right lobe, stricture extended from its lower portion three inches above, and well into the liver substance, hemorrhage severe. Wound in liver was quickly sutured with heavy catgut, hemorrhage being controlled without great difficulty. The spleen was next examined and found to be the seat of an extensive rupture, bleeding profuse. The left rectus was quickly cut across, and the spleen was removed. Copious irrigation of the general peritoneal cavity with hot saline solution was made. The abdominal wall closed through and through with silkworm gut sutures. Patient recovered.

From a careful analysis of the cases coming under my observation, I am convinced that there are present in but few of them, symptoms on which the positive diagnosis of injury to the diaphragm can be made, and that in many cases, where extensive injuries to the abdominal viscera are present, the

patients are apparently in excellent condition, and present practically no symptoms. I, therefore, believe, that in all penetrating gunshot or stab wounds of the chest where, from the location of the wound, it is reasonable to conclude that injury to the diaphragm is possible, the existence or non-existence of such injury should be determined by proper exploration. Positive symptoms in these cases are generally the signals of peritonitis, and peritonitis of this character is usually fatal.

If this view is correct, how shall we explore, through the chest or through the abdomen? A penetrating wound of the diaphragm is a penetrating wound of the abdomen, and an exploration to determine the presence of such an injury which does not enable the operator to repair, if present, the associate injuries to the abdominal viscera should not be undertaken. To sew up an injured diaphragm and leave a perforated bowel or stomach, would certainly prove disastrous. Through an abdominal incision, the extent of injury to both diaphragm and abdominal viscera can be absolutely determined. If it is found that the wound in the diaphragm is so situated that it cannot be repaired through an abdominal incision, thoractomy can be done, resecting an inch or two inches of rib. With the hand in the abdomen, the diaphragm can be pushed into thoractomy wound, as is shown in Fig. 1, making the work of repair quite easy. A method which I have found very useful in dealing with injuries of this character is nicely shown in Fig. 2. It consists of leaving both ends of the first suture long, using one as a tractor.

This method enables the operator to work through a very small incision, and will frequently do away with the necessity of resecting more than a portion of one rib.

In conclusion, let me say that the mortality in this work will always be high. Many of these patients are mortally wounded when seen by the surgeon. There are, however, quite a number whose injuries can be repaired with satisfactory results if operation is undertaken early. I, therefore, urge that more attention be paid to penetrating wounds of the lower chest, and that early exploration be undertaken as a routine procedure in all cases where injury to the diaphragm is suspected.

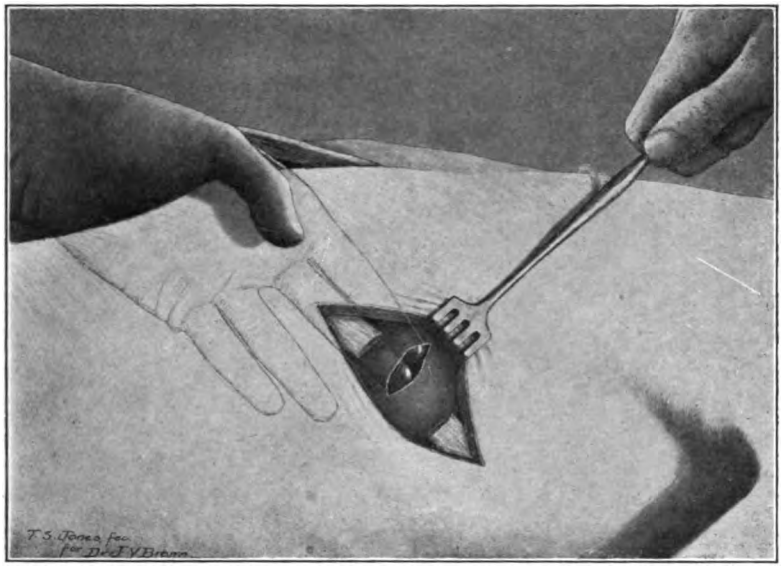


FIG. 1

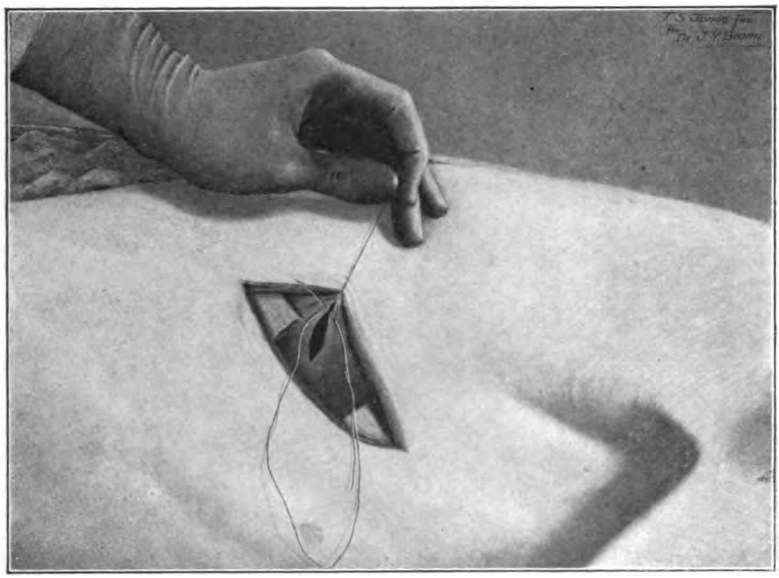


FIG. 2

DISCUSSION.

DR. JAMES N. WEST, New York City (First Vice-President in the Chair).—The interesting and instructive address of the President deals with wounds that are somewhat rare. Therefore, it is extremely important that this paper should be thoroughly discussed and that all its points should be covered to the fullest extent by those who have had opportunities of observing such wounds. This paper is pregnant with suggestions for good, and it is at the special request of the President that I invite a full discussion of his address, to the end that experiences shall be related by the Fellows bearing on wounds of the diaphragm.

DR. JOHN B. MURPHY, Chicago, was asked to open the discussion. He said: Mr. Chairman, this is an epoch-making paper in this line. Our President has covered the field in an able manner. He has presented the salient points, with their difficulties, and it has put us all in line of thought and action in this class of injuries.

Dr. Brown has emphasized a point in relation to explanatory operations in wounds of the chest. If this (indicating on blackboard) represents the side of the chest, and the bullet has entered at a rib level, as low as the fourth interspace, we must expect the diaphragm to be injured, as during expiration it goes up to the level of the fourth interspace, and in full inspiration it is down to the sixth interspace. Fortunately, on the right side we have no viscus situated so high as to give us perforation, as we have the liver filling that space. In the traumas of the upper surface of the liver there are encountered fortunately few vessels of large size which do not give profuse hemorrhages. When we come to the left side of the abdomen it is a different proposition. Here we have the dome of the stomach much higher than is usually estimated, the esophagus entering some distance below the dome level. The stomach is situated in a vertical position in the abdomen and almost completely to the left of the aorta. It is the dome that is endangered in thoracic abdominal bullet wounds.

As to the method of attack, it is questionable whether in these cases of bullet wounds of the ventricular dome it is easier or safer to proceed through the chest or the thoracic or abdominal route. I have had some disagreeable experience in these cases because of the difficulties of technique. First, in a strangulated, diaphragmatic hernia of several days' duration, the small intestine had passed up through the diaphragm to the outer side of the middle line. It was a most uncomfortable place in which to work. It seemed to me a thoracotomy, with separation of the ribs, enlargement of the opening in the diaphragm from above,

would have been easier because the distance is not as great as it is through the abdominal route. I made a thoracotomy in a bullet wound case, opening directly through, over the diaphragm vault, so that the wound was directly in front. I enlarged the diaphragm wound and passed my finger into the abdomen; the stomach was not injured. I sutured the diaphragm from above, sutured the rib and chest, aspirated the air out of the pleura so as to redilate the lungs; the case progressed favorably.

The fear of pneumothorax upon opening the chest is not well founded, and is not as dangerous as we have been led to believe. The muscles which govern the action of respiration are not the costals, and influence respiration only in a secondary manner, as the diaphragm is the piston of respiration. When we open one side of the chest we must immobilize the mediastinal septum, otherwise we have no vacuum produced and no exchange by packing on the operated side. If we do not immobilize the septum we will have a flapping which will throw the lungs out of action. We must guard against this, otherwise the condition of collapse so much feared formerly in operations on the chest may occur.

The difficulty of getting the intestines loose in diaphragmatic hernia is illustrated beautifully in this specimen, which I am pleased to have this opportunity to examine. Here is the omentum (indicating), which has gone into the diaphragm. There is a protrusion within the cavity. The difficulty of enlarging the opening away under the costal arch through an abdominal incision and in getting the contents of the hernia out is very, very great, and that is what forced me in bullet wound cases to go in by the shorter thoracic route.

I have been immensely interested in Dr. Brown's address, because it brings out the fact that when we have cases of this class we must, as Dr. Brown has said, go to work in a forceful and well-directed manner.

DR. GEORGE W. CRILE, Cleveland, who was asked to continue the discussion, said: I know very little about this subject, although I have been very much interested in the President's address. Dr. Murphy mentioned a point, the importance of which we realize more and more as time goes on—namely, that the thorax in connection with breathing is now very much under the control of artificial means, so that we can do almost what we wish with the methods of artificial respiration now in vogue.

Dr. Brown has covered the entire subject so thoroughly that I can only add my tribute of appreciation to his excellent paper.

DR. JOHN F. ERDMANN, New York.—In connection with this discussion I desire to report three cases:

One, a male, received a stab in the sixth intercostal space on the left side, penetrating the pleura, diaphragm, and punctur-

ing the stomach. The stomach was herniated through the incised wound of the diaphragm; the opening of the diaphragm closed down on the stomach to such a degree as to prevent any leakage from the stomach into the peritoneal cavity, the stomach contents discharging through the chest wall wound from the pleural cavity. This patient died before operation.

The second case was a gunshot wound in a male, in which the missile penerated the diaphragm, spleen, and kidney; while the third case was that of a male who received an injury in an obverse direction, the bullet penetrating the abdominal wall, then the diaphragm, and in its transit cutting the right coronary artery.

DR. JOHN B. MURPHY, Chicago.—I neglected to mention in my previous remarks a case which attracted my attention, and was instructive to me from a diagnostic standpoint, in my office a short time ago. This patient had a hernia of the diaphragm, and with the fluoroscope one could not only get an outline of the diaphragm but could see the hernia almost as distinctly as if the chest wall were made of glass. The fluoroscope thus makes the diagnosis of diaphrgamatic hernia simple and positive.

DR. JOSEPH PRICE, Philadelphia.—I wish to allude briefly to the neglect of early interference. It would seem, after listening carefully to the reports of cases in which there were recoveries from surgical interference, that in the others in which death followed, delay was the cause. In other words, there were more extensive injuries in the cases that recovered than there were in those patients who died, and that brings us to the important point that we must do early surgical work in these injuries if we expect to save the patients, whether we do it through the trap-door method, the abdomen, or the conjoined method. Most surgeons, I think, prefer the conjoined method of manipulation, and I think Dr. Brown, with his advanced experience, will do the same hereafter. He does not condemn the thoracic route.

Reference is made to these injuries—gunshot and stab wounds —being made at the sixth and seventh interspaces. Many of these people, when shot, are suffering from acute or chronic inebriety, and they receive plunging shots or stabs, hence it is a mistake, I think, to expect penetration below the fourth interspace. I have seen them literally all over the chest. I have seen four stab wounds, and as I recall, all of them died. I saw these four cases before I graduated. They were gunshot and stab wounds. If these patients are to be saved, they are to be saved as we save patients from gangrenous appendices—that is, by early surgery, preferably the first hour. Had some of the patients been operated upon early, before the peritoneal cavity was soiled with beer, sauerkraut, tripe, and cheese, undoubtedly they would have been saved, because they died of peritonitis. Instead of using small tubes, it is my opinion that if in some of these cases that were dying on the second, or even third day, generous drain-

age had been instituted some of them would have recovered even without putting in a stitch.

THE PRESIDENT (closing the discussion).—I quite agree with Dr. Murphy, that in all cases where a diagnosis of old diaphragmatic hernia has been made the proper method of procedure is to go through the chest. If reduction is found impossible through an incision of this character, the abdomen can then be opened. I, however, believe that in acute injuries to the diaphragm the incision should always be made through the abdomen, as I fully discussed in my paper the importance of dealing with associate injuries of bowel and solid viscera in connection with treatment of injuries to the diaphragm. Such injuries can only be properly handled through an abdominal incision.

In order to do successful work on cases so injured early operation is mandatory. Many of these cases give practically no symptoms, and the late symptoms are, as a rule, the result of widespread peritonitis. Usually the cases that give early symptoms are the ones that bleed. Shock is invariably the result of hemorrhage. However, we see many cases that are badly wounded with multiple bowel perforations that give absolutely no symptoms.

I cannot close this discussion without criticising in unmeasured terms the teachings that military surgeons give us. If we take the textbook articles we will find that they are largely based on the observations and statistics of military men. They claim the ability to diagnosticate penetrating and perforating wounds of the abdomen without exploration. Civil surgeons cannot do that. We cannot make a diagnosis without exploration in these cases sufficiently early to cure them. Military men report many cases of undoubted penetrating wounds of the abdomen that recover without operation. The fact that they recover is a strong argument against the correctness of the diagnosis. I cannot believe that a man suffering from multiple perforations of bowel and mesentery can get well unless these perforations are properly sutured. While such a recovery is possible, it is hardly probable.

Scarcely a week passes that I do not get a gunshot case at the City Hospital, with a diffuse peritonitis, the peritonitis being the result of delay. When peritonitis is present, the diagnosis of perforation is made without difficulty. The mortality in such cases is 95 per cent.

I believe we, as surgeons, should combat such teachings just as we have combated the arguments that have been offered in favor of the medical treatment of appendicitis.

KIDNEY AND COLON SUSPENSION BY THE USE OF THE NEPHROCOLIC LIGAMENT AND GEROTA'S CAPSULE.

(Nephrocolopexy.)

BY

H. W. LONGYEAR, M.D.,

Detroit.

At the annual meeting of the Michigan State Medical Society, held at Petoskey, in June, 1905, the writer, while discussing Dr. Aaron's paper on floating kidney, asserted that he had discovered a cause for dislocation of the kidney by the presence of a distinct union between kidney and colon.[1] Later, in New York, one year ago, in his presidential address before this Association,[2] he described this anatomical union in detail, and exhibited specimens and photographs in support of his contention. On both of these occasions he also mentioned an operation for nephroptosis, which he then had in course of development.

The object of this brochure is to again describe this ligament with added observations recently made on both the cadaver and the living subject, and also to give the technic of the operation referred to as now performed by him.

The nephrocolic ligament is formed by an aggregation of fine fasciculi, originating in and being identical with the fibrous tissue forming the framework of the fatty capsule of the kidney which, after enveloping the kidney in a fine network, passes downward and is inserted into the posterior wall of the ascending colon on the right side, and the descending colon on the left side. Its structure, as well as its action, may be compared to that of the network covering a balloon, the cords of which extend downward and support the car. The kidney is the balloon and the cecum the car.

The kidney descends or not, according to the laxity of its supports and the degree of traction exerted on it by the ce-

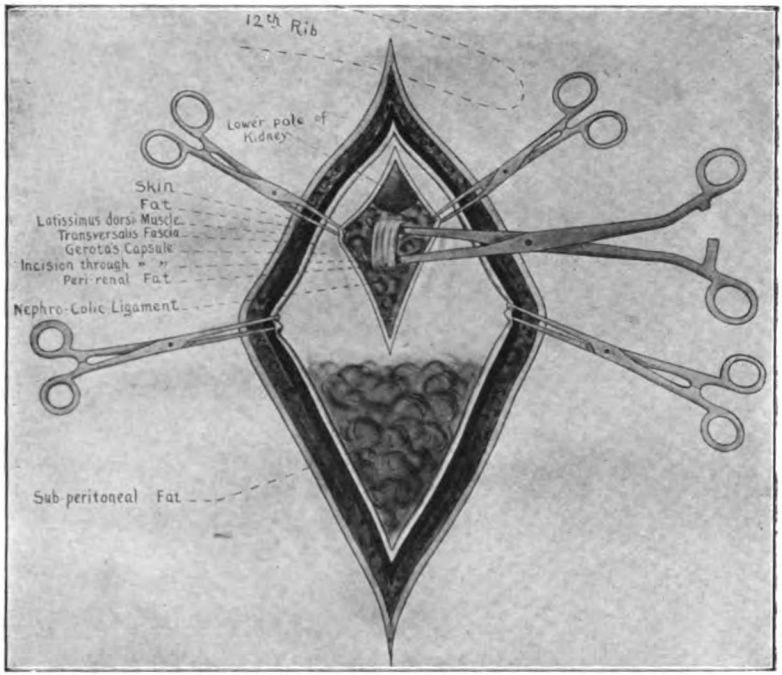
[1] *Jour. Mich. State Med. Soc'y*, Vol. V. No. 1, p. 41.

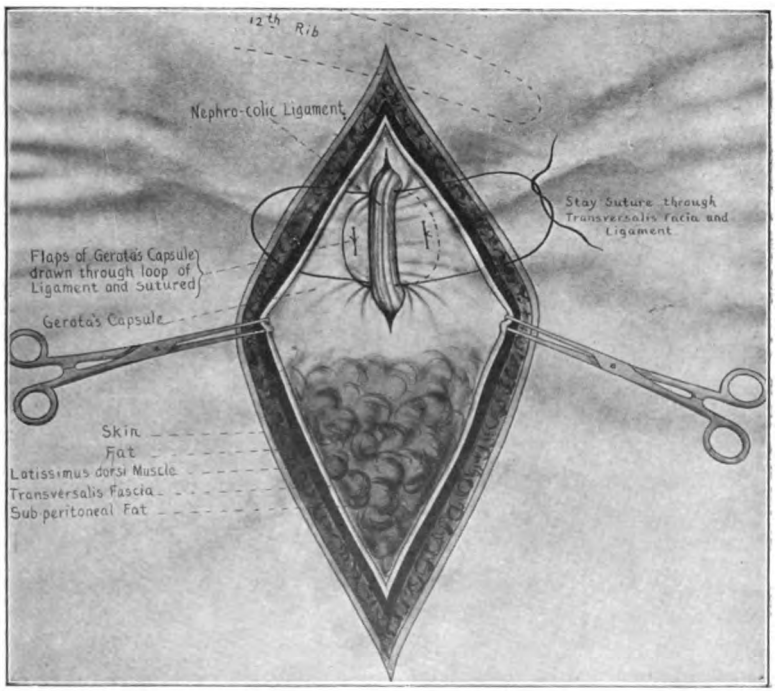
[2] "A Study of Floating Kidney with Suggestions Changing the Operative Technic of Nephropexy." *Trans. A. A. O. & G., 1905.*

cum. The cecum consisting of a sac with its outlet upward, the contents of the viscus must be always forced in that direction, which necessitates the application of tractile force in the opposite direction, and as the nephrocolic ligament is a firm and unyielding attachment, the kidney is pulled downward. When to this natural downward traction of the bowel is added the weight of a full torpid cecum, distended with more or less impacted fecal matter, the force applied to the downward movement of the kidney will be still greater. The violent efforts of the bowel to unload itself, when so distended, aids materially in the completion of this etiologic factor. The action of the colon on the left side is in the opposite direction, as the contents are there forced downward, hence the left kidney is so rarely pulled out of its normal position. When the right kidney is pulled downward by the ascending colon, it pulls with it the duodenum by reason of the adhesion of this intestine to the side of the fatty capsule, and this action probably causing a kink in the bowel, explains the presence of digestive symptoms in cases of prolapse of the right kidney. Prolapse of the left kidney, alone, is exceedingly rare, and when it does occur from any cause, except trauma, gives practically no symptoms. As there are fifteen cases of floating kidney of the right side to one of the left, there must be some good reason for the great difference. The presence of the nephrocolic ligament and the action of the ascending colon and cecum explain this in the most satisfactory manner. As a purely mechanical proposition it cannot be refuted if the presence of the ligament is admitted. That it is present and has come to stay as an anatomic entity is demonstrated not alone by the writer, but by others now working along the same lines The presence of the structure is easy to demonstrate in an emaciated subject, as all fat will have disappeared from it, leaving only the fibrous network surrounding the kidney and passing down to the posterior wall of the bowel.

In the demonstration of its presence, the method of dissection observed by the writer is as follows:

The entire width of the abdominal wall is incised transversely, just below the ribs, and downward on each side to a point about two inches below the anterior-superior spine of the ileum. The abdominal wall is then turned downward, giving free access to the colon on each side. On the right side, the colon at the hepatic flexure and the ileum near its junction





FIGS. 1 AND 2.

LONGYEAR—KIDNEY AND COLON SUSPENSION BY THE NEPHROCOLIC LIGAMENT.

with the cecum are tied and cut through; then the peritoneal attachments of the cecum and ascending colon on each side of the gut are severed. The hand can then be passed under the gut and further on to the kidney, which is pulled down and its attachments severed, with the remaining uncut peritoneum which covers it. On turning over the detached specimen, consisting of cecum and ascending colon and kidney, all covered anteriorly by peritoneum, the union of kidney and bowel is plainly seen. If the subject be fat, the ligamentous character of the union will be obscured by the adipose tissue contained within it. In the thin subject it is very marked. The quantity of tissue composing it varies in amount considerably in different subjects, being fuller and stronger in cases of nephroptosis of long standing, its increased size probably being the result of the long-continued traction to which it has been subjected. Heredity also may have to do with a strong nephrocolic ligament as well as with a loosely-placed kidney, the combination of which results in the displacement of the organ.

The organs of the left side may be removed in the same manner after severing the colon above and below. The ligament on the left side is placed the same, but is not so uniformly regular and strong as on the right. This variation has been especially noted by the writer in the dissection of the newly-born infant.

When we consider the action of the cecum in pulling down the kidney by reason of the presence of this ligament, the question of the utilization of the ligament for the purpose of supporting both the bowel and kidney naturally presents itself. The writer first accomplished this by sewing a loop of the ligament to the incised edges of the transversalis fascia, close to the twelfth rib, using for the purpose a mattress suture of fine silver wire. This seemed to accomplish the purpose, but a more ideal method suggested itself on one occasion while isolating Gerota's capsule during an operation for fixation of the kidney and bowel.

As the modern text books teach us, Gerota's capsule is formed by the splitting of the subperitoneal aponeurosis, one layer of which passes in front of the kidney across to the opposite side, to be continuous with that passing in front of the other kidney, while the posterior layer passes behind the kidney and is inserted into the vertebræ. The wall of the capsule, which is situated outside of the fatty capsule, is thin, but of good

tensile strength, so that on incising it to draw the nephrocolic ligament through, the firmness and fixity shown by the portion passing down behind the kidney from its vertebral insertion was seen to present the best possible tissue for use in fixing the ligament. By drawing the incised edges through the loop of ligament, from each side, and making them broadly overlap each other and suturing them in this position, a firm sling was found to result, which seemed ample for the support of the bowel and kidney. To insure the firm union of this aponeurotic sling, the loop of ligament was stitched to the upper angle of the opening in the transversalis fascia.

This operation was made January 8, 1906, and since that date nine more have been done by this same method. The results thus far are satisfactory, but of course more time and a greater number of cases will be necessary to give statistical value and standing to the operation.

The technic followed is as follows: incision of two and one-half to three inches long, beginning just outside the quadratus lumborum muscle, at the twelfth rib, and passing diagonally downward toward the ilium, through skin, fat and superficial aponeurosis to the latissimus dorsi muscle; blunt dissection through muscle parallel with its fibers; incision of transversalis fascia and its isolation by rat-tooth forceps, one on each side; pushing downward subperitoneal fat; incision of Gerota's capsule and isolation of its edges by tissue forceps, one on each side; grasping and raising nephrocolic ligament with long rat-tooth forceps, directed by finger against lower pole of kidney; gathering up ligament with blunt hook forr ceps passed around it forward of the forceps; liberation of the loop of ligament from peritoneum by opening forceps; drawing through margins of Gerota's capsule, overlapping and suturing under loop of ligament; closing transversalis fascia, with loop of ligament sewed into upper angle, close to twelfth rib; closing balance of wound.

For suturing material, twenty-day, number two, chromicized catgut has been used. In some of the earlier cases, one mattress stitch of silver wire was used to attach the loop of ligament to the transversalis fascia. The buried suture method was used in all cases. Patients are kept in bed three weeks.

An abdominal band, with a thick pad placed below the navel, is applied at the time of operation, and the patient is instructed to wear this for three months.

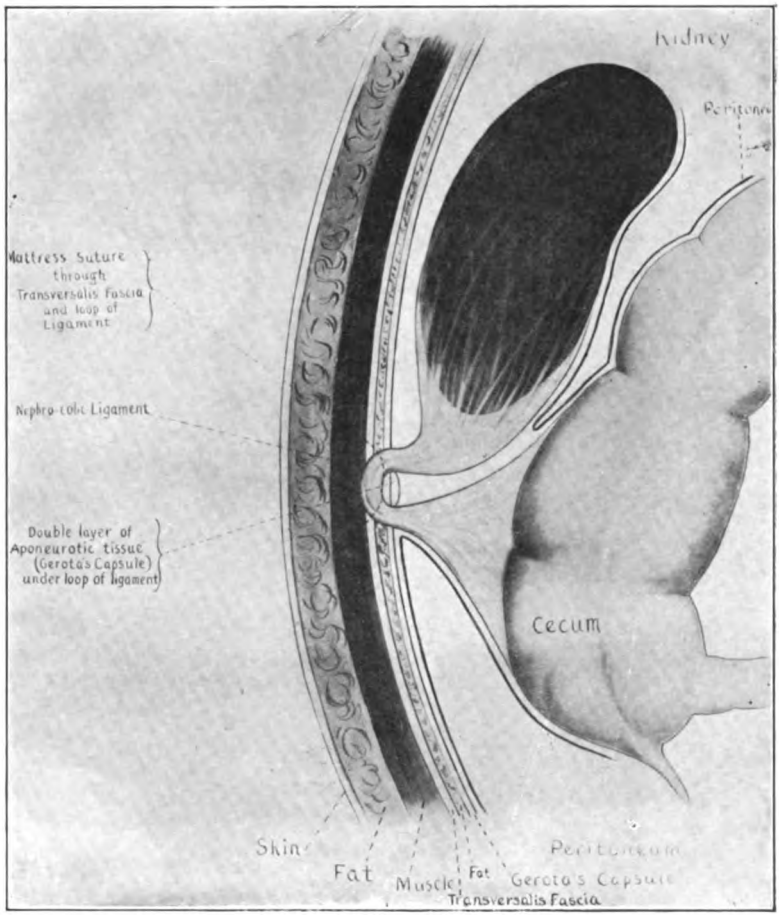


FIG. 3

LONGYEAR—KIDNEY AND COLON SUSPENSION BY THE NEPHROCOLIC LIGAMENT.

Gerota's capsule is easily isolated in the upper angle of the wound, after pushing down the superimposed subperitoneal fat. It is of a pinkish color, thin and tough, and somewhat resembling the peritoneum in appearance. It should be sought for in the upper angle of the wound, as it will often be missed at the lower angle and the peritoneum incised instead. This error can then be seen at once, as no perirenal fat will bulge through the opening, as takes place on incision of the capsule.

The isolation, by rat-tooth forceps, of the transversalis fascia and Gerota's capsule, as these tissues are incised, is for the purpose of quick identification later in the operation, as the writer has found that, otherwise, the several layers of fat quite cover and obscure them in some cases.

In uncomplicated cases, the writer finds no necessity for opening the peritoneal cavity while following this plan of operation, as the isolation and opening of Gerota's capsule renders the nephrocolic ligament easy of access.

Advantages of the operation: mutilation of the parts is slight, so that if failure result by reason of suppuration or other cause, no injury can follow; the kidney is held in a natural, partially movable, manner, allowing of the necessary limited motion which is present normally; the bowel is suspended also, which prevents its farther traction on both the duodenum and kidney (which the author considers the most important attainment of the operation); pain following the operation is very slight, and convalescence comfortable.

These advantages are such that in the opinion of the writer. the operation may be resorted to much more freely and with less hesitation than is the custom in consideration of the old operation of nephropexy, which is more mutilative, painful, and so frequently disappointing.

PRELIMINARY REPORT OF CASES.

CASE I.—Mrs. W. Patient referred by Dr. Florence Huson. Operation at Woman's Hospital, January 8, 1906. Recent examination by Dr. Huson showed kidney in good position and patient much improved.

CASE II.—Miss R. (sister, mother and grandmother known by the writer to have floating kidney). Operation at Harper Hospital, January 10, 1906. Recent examination showed kidney in good position, the lower pole palpable below ribs on deep inspiration. Symptoms of indigestion, nervous depres-

sion, backache, etc., entirely gone, and patient able to walk long distances without distress or fatigue, and bowels now regular.

CASE III.—Mrs. T., sister of Case II. Operation at Harper Hospital, February 1, 1906. Slight suppuration of wound. Patient suffered a bad fall soon after leaving the hospital, which was followed by severe pain in region of kidney. When seen two weeks after the accident the kidney was again displaced. Patient is now much improved in every way, is gaining in flesh, can endure fatigue, and says digestion and nerve force are improving constantly and defecation normal. The kidney probably slipped through the fatty capsule, leaving the bowel suspension intact, which latter condition doubtless causes the improvements and sustains the theory of the writer as to the rôle played by the displaced bowel.

CASE IV.—Miss A., a nun, referred by Dr. Coddieux. Operation at convent, March 13, 1906. Aseptic conditions bad, causing sepsis and free suppuration of wound. Recent report was that the kidney was down and all symptoms returned.

CASE V.—Miss N., referred by Dr. G. Potter. Operation at Harper Hospital, March 12, 1906. Dr. P. reports kidney in good position, lower pole palpable on deep inspiration,but patient's symptoms—principally backache—not much improved.

CASE VI.—Mrs. B.; patient referred by Dr. Repp. Operation at St. Mary's Hospital, March 17, 1906. Dr. Repp reports the operation a success in every way.

CASE VII.—Mrs. G. Operation at Harper Hospital, June 5, 1906. Reports digestion and nervous symptoms much improved.

CASE VIII.—Mrs. P.; referred by Dr. F. L. Newman. Operation at Harper Hospital, June 5, 1906. Examined September 16, 1906. Kidney in good position and all nervous and digestive symptoms improving; gaining in flesh.

CASE IX.—Miss D.; referred by Dr. E. S. Sherrill. Operation July 3, 1906. Reports improvement; at work as stenographer; not examined.

CASE X.—Mrs. B. Operation September 18, 1906; too recent for report.

A NEW TECHNIQUE FOR THE FIXATION OF FLOATING KIDNEY, WITH SPECIAL REFERENCE TO THE UTILIZATION OF LONGYEAR'S LIGAMENT.

BY

CHARLES A. L. REED, M.D.,

Cincinnati.

As early as 1889 Tuffier (*Etudes Experimentales sur la Chirurgie du Rein*) called attention to the frequent coincidence of displaced cecum and displaced right kidney. He did not, however, attach any etiological relationship to the fact, but like writers both before and since, was disposed to account for the greater frequency of right-sided nephroptosis by the influence of the liver in producing decensus of the kidney. This view has been, as, indeed, it is yet, very generally accepted by the profession. It was, however, left for Longyear at the last annual session of the Association (*Transactions Amer. Assn. Obstetricians and Gynecologists*, 1905) to demonstrate the anatomical connection between the kidney and the cecum and thereby to explain ow the frequent decensus o the cecum may become the cause of the very less frequent decensus of the right kidney. Longyear's ligament is, I am sure, destined to become, not only a generally recognized anatomical structure, but one that by virtue of the etiological relationship already indicated, is equally destined to play an important rôle in the surgery of the right kidney.

As I stated in my discussion of Dr. Longyear's paper last year, this structure, although I was quite innocent of its existence as an anatomical entity, has been playing an important part in my operations upon the right kidney during the last several years. I may say, in the first place, that, in respect of operations for fixation of the kidney, I have boxed the com pass both ways. I began with transfixions; then I cleaned away the perirenal fat, pushed the kidney back into its nest and kept it there by packing with sterilized, generall iodoform-ized gauze, removin the gauze only after granulations had been presumed to form around the organ; then I fell in with the de-

cortication trick; then I compromised by slitting the true capsule and stitching the margins of the flaps thus formed to the margins of the wound; then I tried partial decortication and the retention of the kidney *in situ normalis* by surrounding it for a while with a couple of drainage tubes, the ends of which I brought through stab wounds through the wall. But my transfixions gave me bloody urine, and in a couple of cases were followed by renal infection; my gauze packings were tedious, painful, and *not always* satisfactory in their results; decortication was followed in one case by painful kidney which, two months later, became the seat of interstitial nephritis; splitting the capsule and stitching its margins to the wound margins did better; partial decortication with temporary retention of the kidney in position by drainage tubes was almost as objectionable as the taxidermic method that I had abandoned. I was, in fact, far from satisfied with any of these proceedings, all of which seemed to be open to the logical objection that they involved unnecessary injury to the kidney or other tissues without reference to the correction of causal conditions, which although undetermined, were logically existant.

In this dilemma I took stock of my experience with the result that I became convinced that the only strictly logical step that I had so far hit upon was the careful removal of the perirenal fat, an excess of which I became and remained convinced, is an important factor in enabling the kidney to escape from its always somewhat lax anchorage. This, then, was in the direction of the removal of cause. But another thing that impressed me was the frequency with which, in endeavoring to enucleate the kidney, I found it bound down by apparently connective tissue striæ extending downward from its lower extremity. I took the trouble to see if these striæ belonged there, but found no reference to them, either in the anatomies or in Glantenay, and Gosset's valuable contribution on "Le Fascia Perirenal" (*Annales des Maladies des Organes Genito-urinaires*, 1898), Zuckerkandel was equally silent; I accordingly looked upon the structure as strictly adventitious, probably of inflammatory origin, but as it seemed to hold the kidney in its displaced position I divided it with scissors. This left a little stump which, situated as it was, seemed to be a good thing to stitch into the upper angle of the wound, where it served a good purpose in holding the kidney precisely where it belonged. Then seeing that the perinephric fascia was arranged

like a funnel upside down so that the kidney could easily spill out, it seemed a very rational thing to gather the anterior and posterior layers of that fascia and the peritoneum together and stitch them together just below the lower margin of the kidney after it had been restored to its normal locus. Thus was gradually evolved an operation that I have been doing for the last two and a-half years about as follows:

With the patient lying on the side across a large solid pad placed beneath the costoiliac interval, an oblique incision is made in the usual way along the costal margin. When the renal fossa is reached the kidney is forced up into position by the hand of an assistant, enucleated from above, seized by the thumb and fingers and drawn entirely out of the operation wound. The apparent adhesions which we now know to be Longyear's ligament, and by which the elevation of the kidney is resisted, are snipped off a half or three-quarters of an inch from the kidney, care being taken not to separate the true capsule of the kidney from this structure; the kidney, now drawn up, is subjected to vigorous friction by gauze until it shows minute specks of capillary hemorrhage over its entire upper and middle surface; gauze is now likewise employed to wipe out all of the perinephric fat; the kidney is then restored to its nest; the stump of Longyear's ligament is then stitched by interrupted sutures of chromicized catgut to the aponeurotic margins in the upper lip of the operation wound; the layers of the perinephric fascia, together with the peritoneum are then gathered together, stitched together snug against the lower end of the kidney, and fixed by suture to the aponeurotic structures in the upper lip of the operation wound; the operation wound is then closed with laminated suture of chromicised catgut.

The rationale of this technic is to me so apparent that it requires neither explanation nor defense. It may, however, be well to emphasize a few of its most important features. The removal of the perinephric fat has already been explained as rational practice; while gauze friction of the true capsule of the elevated kidney establishes the foundation for an inflammatory exudate by which the kidney becomes adherent to the structures with which it lies in contact. This contact is maintained by fixing the stump of Longyear's ligament in the upper angle of the wound. But the management of this ligament, as indicated, is of even greater importance. As demonstrated by Longyear himself, this structure connects the kidney with

the cecum, and through this medium the latter, when prolapsed constantly, drags upon the former. By dividing this ligament, therefore, this downward traction upon the kidney is removed and thus another causal factor is eliminated. The gathering together and fixation of the perinephric fascia, as indicated, furnishes an additional support to the replaced organ. The lower segment of the ligament is best disposed of by fixation to the lower margin of the wound.

I beg leave to submit a few records from my experience illustrative of this practice, as follows:

CASE I.—Mrs. —— (Cincinnati), æt. 32, married, one child, eight years old; no conception since; always of constipated habit; pain in right loin and right iliac region since childbirth. The lower margin of the right kidney was found on a level with the crest of the ileum and dropped to the other side of the abdomen when she laid on the left side. The patient entered the Good Samaritan "Annex" Clifton, March 23, 1904, and was operated upon the next day by technic already outlined. Convalescence was uninterrupted, and patient was dismissed May 4, and is well at this date (September 20, 1906).

CASE II.—Mrs. —— (Miami, Ohio), æt. 50, menopause four years ago; married thirty-nine years; no conception; constipated habit; complains of constant pain in right side. Kidney found at the brim of the pelvis, is very movable and very tender. Entered the Good Samaritan "Annex," Clifton, March 24, 1904; operation May 25. In this case a distant mesonephron had formed through the peritoneal layers, of which the kidney was delivered with some difficulty. After the restoration of the kidney to its normal site the mesonephron was drawn around and included in the sutures that embraced the perinephric fascia. The technic already described was followed in all other particulars. The patient left the house June 13, 1904, and has had no return of symptoms.

CASE III.—Mr. —— (Elmwood Place, Ohio), æt. 46, contractor; fell from a building three years ago and was picked up unconscious. From that time on he had pain in the right loin and the right iliac region. These symptoms grew worse until they became the occasion for examination September 18, 1904, when I found his kidney enlarged, tender, and presenting anteriorly below the costal margin. A week on his back reduced all symptoms, but another week spent about his business brought them back again. He entered the hospital October 8, was

operated upon October 10, and left cured November 16, 1905.

CASE IV.—Mrs. —— (Dayton, Ohio), æt. 39; married; three children; had a diagnosis of right floating kidney made four years previously. She has had two attacks suggestive of strangulation due to torsion within the last three months. These prompted her to apply for operation, for which she entered November 19, 1905. The operation was done a day or two later, and she left the house December 24, 1905, cured.

CASE V.—Mrs. —— (Hamilton, Ohio), æt. 37, widow, no children; saleswoman; strained herself while descending from a step ladder about two months previously, and since then has had constant pain in the region of the right kidney. She came to the hospital January 2, 1906, when I found her right kidney tender, enlarged, and displaced. A week's rest improved the condition materially, after which I operated as indicated. There was some remaining hydronephrosis at the time, but it speedily disappeared after fixation and the patient was discharged, cured, February 6, 1906.

CASE VI.—Mr. —— (Glen Mary, Tenn.), æt. 41, merchant, six years ago noticed pain and enlargement in left renal region. Examination showed displacement of kidney with about three inches radius of mobility. Improves by rest, grows worse under activity. Entered the "Annex" May 13, was operated upon the 14th, and was dismissed cured June 3, 1905. In spite of the fact that his convalescence in bed was shorter than it ought to have been there has been no recurrence.

CASE VII.—Mr. —— (Wheeling, W. Va.), æt. 22, student was seized with pain in his right side while playing football on a university team, two years before. It increased in severity until it finally confined him to bed. The right kidney was found movable, tender, and enlarged. He entered October 11, 1905; operation October 15, dismissed cured November 23. He has remained well ever since.

CASE VIII.—Mrs. —— (New Burlington, Ohio), æt. 58, constipated; had long been a sufferer from pain in entire right side of the abdomen. Tenderness on that side was diffuse, but more acute under the costal margin. She occasionally had sharp exacerbations of paroxysmal pain, associated with vomiting. The right kidney was displaced mobile. She entered the "Annex," Clifton, January 22. Exploration January 23 revealed nephroptosis, gallstone, and chronic appendicitis. The gall-bladder was opened, a large number of cal-

culi removed, and drainage established. The perinephric fat was not removed as the patient was emaciated, but the nephrocolic ligament was divided through the anterior incision; the peritoneum opened and the upper stump of the ligament sutured to the posterior abdominal wall. The appendix was removed. Patient was dismissed, well, February 19, 1906.

CASE IX.—Miss —— (Cincinnati), æt. 34, had a uterine polyp, for which I operated at the "Annex" in March, 1906. At this time I discovered, while the patient was under anesthesia that there was marked mobility of the right kidney, which probably accounted for persistent pain that she experienced in the right side. I accordingly, a month later, operated for fixation of the kidney. The mobility is arrested, but she at times complains of paroxysmal pain in the kidney, which I fear is due to the presence of a calculus. As there were no indications demanding exploration of the interior of the kidney, it was not done. The patient left the hospital May 12, 1906.

CASE X.—Mrs. —— (Elwood, Ind.), æt. 23, very stout, presented a history of a recent acute attack of appendicitis and applied specifically to have the now quiescent appendix removed. She entered the "Annex" for this purpose April 9, 1906, and the operation was done the next day. On slipping my fingers into the abdomen, I found not only a badly damaged appendix, but the right kidney near the brim of the pelvis. I thereupon made a supplementary incision in the loin and fixed the kidney as I have described. She left the hospital, cured, Apri 27, 1906.

CASE XI.—Mrs. —— (Glencoe, Ky.), æt. 28, married; has had two children; was always well until February 13, 1906, when she was in a head-on collision on a railroad. Thec oncussion was so great that she was thrown first forward then backward across the back of the seat. Following this she had profound disturbance of the nervous system, associated with pelvic, abdominal, and lumbar pains of great severity. The lumbar pain was on the left side and was found to be associated with marked decensus of the kidney on that side. The pelvic pain, largely sacral, was due to a retroflexion of the uterus. She entered the hospital August 7 and was operated upon September 20. The uterus was fixed by shortening the round ligaments and the left kidney fixed by shortening Longyear's ligament. The patient was dismissed several weeks later with some remaining pain in the left renal region. August 7–November —, 1906.

THE TECHNIC OF KIDNEY FIXATION.

BY

J. H. CARSTENS, M.D.,

Detroit.

A MOVABLE kidney, no matter what the degree or the mobility is, causes more or less distress, as a general rule, and although sometimes by the development of adipose tissue the distress is lessened, or by wearing a belt some relief is obtained, there can be no permanent and lasting cure unless the kidney is properly fixed as near to the normal position as possible.

Many methods of more or less value have been devised. Originally the fatty capsule was attached to the muscle; or the kidney was more or less stitched by sutures placed directly through its substance; or the kidney was scraped and partly denuded so that it would become attached. Then it was advocated to stitch the fibrous capsule (after splitting it) to the muscle. Later on, Senn suggested the method of getting the kidney to the line of incision with gauze and permitting it to heal by granulation. The latest is the Longyear nephrocolic ligament.

All methods have been successful and all have been failures. The latter is often due to lack of thorough examination of the patient or not considering other conditions or symptoms, especially general abdominal ptosis. This condition often causes all the symptoms, and fixing the kidney does not relieve the patient, so that it is very necessary in making a prognosis to be sure that the kidney is at the bottom of the trouble and produces all the symptoms. This point I cannot emphasize too strongly.

After trying all the other methods, except the last mentioned, years ago, I finally came to the conclusion that splitting the fibrous capsule of the kidney and attaching the latter to the muscle, was the best method. For more than ten years I have practised this plan with uniform success. As stated in an article published last spring, in my earlier operations I made the incision at the outer edge of the quadratus lumborum and found that I did not get the kidney high enough, and that the

clothes at the waist sometimes pressed the lower edge, so I came to the conclusion that the best incision was at the outer edge of the erector spinæ muscle. I place the patient on the side opposite to that on which I am going to operate, with a large sand bag under the waist line, and the knees well flexed on the abdomen. I prefer this, as a rule, to placing them on the abdomen, as some do. I always, figuratively speaking, use chloroform in operating on the kidney. The patient being prepared in the usual manner and in position, I make an incision from the lower edge of the ribs downward to the crest of the ileum, about one and one-half inches long, through the skin down to the muscle. Either with the handle of the knife or the finger I now separate the muscle and thus have little or no hemorrhage. Sometimes a fascia has to be cut, but generally one can do everything with the handle of his knife and finger. Being now back of the peritoneum one can get hold of the kidney. If it floats around or is down in the pelvis, as it sometimes is, the assistant can put it into place and hold it with his hand. Through the small incision one can generally separate the fatty capsule, more or less, and reach the kidney itself.

I have tried various instruments to seize the kidney, but they did not work, except the two-pronged tenaculum forceps. It does not seem to injure the kidney to put the forceps through its substance. One then has absolute control over it and can separate the balance of the fatty capsule and bring the kidney up to the opening. With a knife make a long incision through the fibrous capsule lengthwise. If one cuts into the kidney itself it will do no harm. It may cause a little bleeding, but after a little practice one will not do that very often. With a small artery forceps take hold of the fibroid capsule on one side and with another artery forceps seize it on the other side. I generally take hold of one side at the upper end of the wound and then with the other at the lower end of the wound. Having firm hold of the kidney now by the forceps one may remove the tenaculum forceps and with the finger between the kidney and the capsule can loosen the latter all around down low, tearing the capsule still more if necessary, with the finger. One cannot do much in the way of loosening the capsule. A firmer attachment is secured. With a good hold on the fibrous capsule, I put in a couple of dry, sterilized catgut sutures and attach it to the muscle on one side; the other end of the fibrous capsule I generally turn a little inward so that the kidney can unite as

firmly as possible. I then put in a couple of stitches where the other forceps holds the capsule and attach that to the muscle at the opposite side of the wound, and also turn in the other end of the fibrous capsule. I run two or three sutures to bring the muscle into apposition. The skin only can be closed with a fine catgut suture, or, as I usually do, with a few strips of adhesive plaster, bringing it into careful apposition. I then take two inches of zinc oxide plaster, starting at the middle of the spine and lay it forward to practically cover the wound and then around the waist in the front of the abdomen up to the umbilicus. This should act as a kind of buffer during the vomiting and retching which sometimes occurs on the first day.

Light diet is given for a few days, after that anything may be eaten, but patients must stay in bed fifteen days. After a few days they can lie on that side where the kidney has been attached. If both kidneys are operated on at the same time they must lie on the back for the whole time. In fifteen days they are allowed to sit up, the next day to walk around, and by the eighteenth day I allow them to go home. The wound heals by first intention. I take the plaster off in about two weeks and apply another, which they keep on when they go home, and they can remove it themselves after a few weeks.

This operation is simple and can be done in ten minutes through a very small opening. It gives permanent results, and seems to me to be the ideal method of permanently fixing a kidney.

DISCUSSION.

DR. HERMAN E. HAYD, Buffalo.—I have been particularly interested in this subject, and it will give me much pleasure to discuss these papers. First of all, I wish to say that I cannot tell when I have learned more than I have from these papers this morning, because I am frank to admit, as I think most members of the Association are, that I do not know of a class of operations that have been so disappointing as the ordinary operations for floating kidney. I never knew why these operations failed. Like Dr. Reed, I tried all the different operations, and then gradually settled down to an operation which I thought was satisfactory.

At the outset I opened the fatty capsule, and expected the kidney would adhere to the back, and closed the wound. In some of the cases the kidney did adhere to the back and the operation suc-

ceeded satisfactorily, while in others the operation failed. That induced me to go a little further, and I then began to sew the kidney to the wound, that is, to transfix it. Some of these operations were attended with success; others failed. Then I was persuaded by reason of the work of Morris to split off a portion of the capsule and sew it into the edges of the wound. Some of these operations, too, were satisfactory; others, again, were failures. I am pleased to be able to say that it is a great source of satisfaction to compliment the work of Dr. Longyear, who has so modestly presented the question of his ligament, and who has been so ably supported by Dr. Reed in this work. I am satisfied, however, that from now on I am going to do the operation that Dr. Reed has described. Why? Because when we have a pronounced case of floating kidney to deal with, we have two factors to meet—namely, a separated kidney and a separated cecum with an ascending colon.

I am not satisfied with simply hitching the kidney by the Longyear ligament—which I am going to call it in the future—and I do not think we will be able to fasten the kidney permanently by that method alone. To my mind it is not possible to fasten a kidney unless you deliver it so as to produce a certain amount of adhesive union between the kidney and the loose structures which it has occupied so long. Therefore, I shall do Reed's modification of Longyear's operation because we not only fasten the kidney but support the colon and cecum. However, in doing kidney operations we must not forget the good work that has been done by other operators. Edebohls has proven conclusively (a good many men do not give him the credit to which he is entitled) that many of these cases of floating kidney are the subjects of parenchymatous nephritis, and that unless we deliver these kidneys and examine them, it is not possible for us to tell exactly what their condition is. Then, again, when the kidney is delivered its capsule can be stripped off, if thought necessary, to cure it of its inflammation according to Edebohls.

This morning we have had developed an ideal operation for floating kidney—namely, to deliver the kidney, split the capsule if it be necessary, cut the Longyear ligament, hoping by reason of the irritation we have done to the kidney to produce adhesive union, and, by picking up the Longyear ligament and sewing it as Dr. Reed does, we lift the prolapsed cecum and colon and prevent future tugging on the kidney. This is one of the most important contributions we have had, and I wish to thank these gentlemen for what they have done. In the future I am going to work on the lines that have been indicated, and go a little further than what Dr. Longyear has suggested, by embracing what Dr. Reed has so splendidly demonstrated by his successes.

Of course, it may be a little too early to accept all that Dr. Reed has said, as in many cases that are operated on, after a period of three or four or six months, the kidney falls down

again. But anatomically and clinically both Drs. Longyear and Reed are working on lines that point to success.

DR. EARL HARLAN, Cincinnati, Ohio (by invitation).—I wish to state that what I may say in this discussion is simply quoted in brief from an original contribution to the study of dislocated kidney, read before the Academy of Medicine in Cincinnati, June 12, 1905, and published in the *Lancet-Clinic*, July 22 of that year. To thoroughly understand the subject of dislocated kidney one should be familiar with the normal anatomical relations of the surrounding organs, the nerve supply and circulation of the parts, and have a correct knowledge of the attachments and relations of the peritoneum.

I wish, first, to call attention to the very wide range of pathological anatomy attendant upon kidney dislocations and to show that any operative procedures, which have for their intention the correction of the numerous symptoms that wait upon this trouble, must be based upon a correct rearrangement of the normal anatomy of the parts in the right upper quadrant. It was the consideration of this feature that led me to devise an operative technic which, I think, is satisfactory in every particular, inasmuch as it is based on normal anatomy of this region. A dislocated kidney is one in which there is a pathological separation of the peritoneum and bowel from the back, allowing the kidney to fall downward from its natural resting-place, impinging upon the abdominal viscera in its descent, and interfering with both the normal functions of the kidney and the physiology of digestion. There may or may not be an elongation of the peritoneum in front of the point of pressure.

The abnormal position of the kidney under these circumstances may be any one or all of the following, these being modified by the normal placement of the kidney, which varies in different subjects, and the conditions of resistance, which vary under circumstances within the abdominal cavity. In long-waisted subjects, where the kidney normally rises above the hepatic flexure, it may in dislocations descend and catch immediately on top of the flexure, thereby gradually crushing and mashing down the bowel to such an extent as to lead to conditions which will cause partial or complete obstruction, the latter becoming at times acute. In this case the flexure will be found low down, the ascending colon crowded down and out toward the lateral lumbar region, and the cecum will rest tightly against the right flank, while there may or may not be all the evidences of appendicitis. The operative procedure indicated in such a case would be a firm reattachment of the flexure to the back, with a shortening and reattachment of the peritoneum below and in front of the kidney.

In those cases in which the kidney slips down immediately behind the bowel, sometimes even into the right inguinal region, the peritoneum and bowel at the junction of these two should be sutured to the lumbar fascia. In those cases in which the kidney

separates the posterior layer of the outer fold of the peritoneum from the back, and in which the kidney slips downward and outward toward the anterior superior spine of the ilium, impinging upon the lumen of the bowel and dragging upon the peritoneum, the cavity beneath the latter should be eliminated by a T-shaped process of suturing, the lower arm running up along the outside of the bowel, and the top of the T running from the lateral lumbar region across to the bowel inside.

In some cases the kidney will descend for a short distance, at which it will encounter resistance in the shape of a better peritoneal attachment, then turning on its own axis the lower pole will protrude directly into the lumen of the bowel. The same thing may happen to the upper pole; it may occlude the bowel instead of the lower one, which latter is the usual order in dislocations of this nature. Other variations, too numerous to mention here, occur in dislocated kidney, all of which must be met with logical methods of treatment. I cure many of these cases by the application of the bandage and pad described by me in the article referred to on this subject. For those which demand operative treatment I apply my own operative methods, which have been published and which are partly quoted above.

I wish also to say that no stereotyped operative measure will apply to the relief of this trouble, but rather a correction of the entire pathology produced by kidney dislocations is indicated. In order to succeed in this, no operative procedure done through the lumbar incision can be effective, as it is impossible to distinguish through this incision the relations and conditions of the viscera in the wall of the bowel from the parietal peritoneum. The incision for dislocated kidney should be made in front, beginning at the external border of the rectus muscle, and running parallel with the lower border of the ribs, terminating at the lateral lumbar region. Such an incision gives one an opportunity to explore all the organs concerned in the symptomatology of a dislocated kidney, including the gall-bladder and ducts—biliary, hepatic, and common—the duodenum, when the outer fold is incised, the cecum, appendix, ascending colon, and hepatic flexure, as well as the peritoneum itself. This incision so simplifies the trouble as to make its correction a matter of no moment. It also enables one to remove gallstones and drain the gall-bladder if this be necessary, or a mistake in the diagnosis has been made. All future operations done by myself for all kidney troubles, except possibly in cases in which there is suppuration of the kidney, as well as those done for the relief of gall-bladder trouble, will be done through this incision. Another good reason why I shall use this incision in the future is because in all cases of dislocated kidney which have come under my observation to date the gall-bladder is implicated and, generally speaking, the reverse is true.

In most short, stout subjects, in whom there may be present a dislocated kidney, the latter organ lies directly behind the colon. In these cases there can be no implication of the peritoneum

between the kidney and colon, the nephrocolic peritoneal fold. Operative relief, therefore, based on this procedure would be absurd, founded as it is on impossible anatomy. This procedure is but one of a number of measures devised by myself in an effort to tabulate a stereotyped method of operative technic, to be used in circumventing the numerous pathological phases assumed by a dislocated kidney.

I wish to dispute the assertion made that there exists any stable anatomical entity which simulates the ligament described by Dr. Longyear. Considerable research in the anatomical laboratory has failed to reveal to me anything more in this region than the connective tissue fibers, which are in some cases more pronounced than in others. And especially have I noticed an absence of the development of these fibers in some cases of dislocated kidney where, in case you would try to do the operation described by Dr. Longyear, it would be like splitting a hair to attempt separation of these fibers from the peritoneum in front.

I also wish to dispute the assertion that the impacted cecum dislocates the kidney by making traction on the colon and kidney through this supposed ligament. Else how do we account for those cases of dislocation in which there is a straight descent of the kidney behind the bowel without any prolapse whatever of the latter? Also, how would we account for those cases of dislocation in which the kidney descends around to the outer side of the bowel, separating the peritoneum and connective tissue beneath it from the lumbar fascia, and extending clear down into the right flank, while the bowel stands erect and to the inside of the kidney? Again, how would we account for those cases in which there are no symptoms whatever referred to the cecum, ascending colon, and flexure? In my own case the kidney fell, and I could feel the sensation of the latter pressing on the bowel in its descent, a sensation which I shall never forget, while particular attention to this point in searching these cases has enabled me in a number of instances to trace this feeling in others. Constipation and diarrhea cause dislocated kidney, not by traction on the cecum, but by depleting peritoneal tone and vitality by the repeated congestions and engorgements and toxic absorptions which attend such troubles.

DR. JAMES F. BALDWIN, Columbus.—Ordinarily, in anchoring a kidney, I have taken particular pains to open the peritoneum, after removing the perirenal fat and getting the kidney up out of the way. I have done it in order that I might examine the condition of the appendix, and particularly since the publication of Edebohls's article some years ago in which he called attention to the great frequency with which we had chronic appendicitis associated with movable kidney. The appendix can easily be brought out and removed, if it is found diseased. The peritoneum is closed with a few stitches of catgut, and the operation proceeded with.

In operating on the kidney, and in all operations in which I use catgut, I never use a size larger than No. 1 chromicized. If properly prepared, it cannot be broken by the ordinary force which is applied with the hands. Laboratory experiments have demonstrated repeatedly that the difficulties of sterilization increase with the size of the gut. It is much more difficult to sterilize No. 2 than No. 1 catgut; likewise more difficult to sterilize No. 4 than No. 3; consequently for many years I have used nothing larger than No. 1. It lasts long enough to meet the requirements of all purposes for which catgut is employed.

I contributed to the *Journal of the American Medical Association*, January 28, 1899, a brief description of a method which I had been using for some time in anchoring the kidney. Later some New York surgeon appropriated my operation without giving me credit, and I contributed a short article to the *Medical Record*, July 6, 1901, calling attention to priority of publication, and also to what I regarded as an improvement in technic.

As to the Longyear ligament: after returning from the New York meeting last year, within a week I anchored a kidney, and found a typical Longyear ligament, which I utilized after his technic, and so far as I know with a perfect result. But since then in only one or two cases have I found such a ligament I thought I could safely utilize. However, in the majority of cases in which I have anchored kidneys since then, I have resorted to this method.

A week or two ago I operated on a patient for inflammation of the gall-bladder upon whom some three or four years previously I had made this operation, and I took advantage of having an incision that would admit my hand to examine both kidneys. This I did, and it was exceedingly satisfactory to know how nearly in a physiological position the kidney was, with almost its normal range of mobility.

DR. JOHN B. MURPHY, Chicago, was asked to continue the discussion. He said: I was very much interested in the presentation of this subject by Dr. Longyear, and in the paper of Dr. Reed. I have nothing to say on this particular operation. It seems to me to be based on good grounds, but more than that I know nothing about it. I am anxious to find some easier method than the one we are at present using in Chicago. However, I can say for the Chicago contingent that we are anchoring kidneys so that they stay.

DR. JOSEPH PRICE, Philadelphia.—I would like to say a word or two before the subject is passed. It has been presented from almost three surgical points of view. The methods are rather new and novel, and the cry for them has been quite universal. I care nothing about the claims of priority. The method of Dr. Carstens, for instance, from a purely anatomical and surgical standpoint, I would consider most radical. I know a number of good surgeons, and among them Dr. Burns, of Scranton, Pa.,

who practise incision, freeing of the capsule, and the anchorage of the kidney to the capsule or to the erector spinæ muscles. He reaches the kidney in front of the muscle quickly, and seems to have a more ready control of it. He draws the kidney into the incision very easily and quickly incises the capsule, and he has just as much control of the body of that kidney as I have or you would have of my body, if my coat were open as a capsule.

I know little or nothing about the procedures that have been referred to. Anchoring of the kidney is a rare operation with me. I commence in septic zones and remain there in my surgery. Occasionally, I am asked to do an operation on kidney cases, but I would rather turn those patients over to Dr. Longyear, to Dr. Reed, or to someone else if they were not so far away. But I will say this, I am glad to see the West so progressive, and that Western surgeons are entering the progressive field. I find a great many operators throughout the country anchoring pathological kidneys, anchoring descensus of the kidney in the midst of grave pathology. I have been simply horrified to find suppuration of the gall-bladder in some of these cases involving the kidney, or an incipient tubercular kidney that has been anchored. Last summer I found five such cases. I went to Virginia and found a patient who had undergone five operations. Someone had removed her appendix. Later he discovered that the kidney was at fault. He did a posterior operation, which failed to anchor the kidney. This was a man of considerable prominence in surgery. He did anterior fixation of the kidney and colon, after which I incised the kidney, and removed a stone and pus. I operated on five patients, one in Virginia, one in Warren, O., and another in Chambersburg, Pa., and the pathological condition was so bad I even got gallstones through an incision in the kidney that had been anchored.

I am very glad indeed to find my colleague, Dr. Reed, so skilled in diagnosis. This is characteristic of gynecologists. They recognize appendicitis; they recognize gallstones, and also floating kidney. They do not overlook multiple pathological conditions in their patients. I refer to these things to fortify our position in diagnosis as gynecologists. One of the patients I have referred to was operated upon at the Johns Hopkins Hospital. There they first did a posterior fixation of the kidney; later an anterior anchorage, and I removed from that woman a large pathological kidney. It is not pleasant to repeat operations where you find fore and aft anchorage, giving you scar tissue, shock, and increased hemorrhage in your surgical work. Those things favor a mortality we so much dislike.

I wish to emphasize the point that a great many men are still anchoring pathological kidneys. I want to congratulate my scientific friend, Dr. Reed, in not making that error. Edebohls anchored fifteen kidneys early in the history of this subject. He found that a little vessel was given off, and anchorage of the kidney influenced to some extent the circulation of the appendix.

An early diagnosis was made in those cases, and in his first fifteen cases he removed the appendix. That sometimes makes me feel that he has his patients on hand or on tap ready for operation.

DR. LONGYEAR (closing the discussion on his part).—I was very much interested in the instructive paper of Dr. Reed, with reference to the method he has described, and also his way of treating the stump. I understand that he sews it into the wound after he has cut it, and this, in my opinion, effects a cure more than by the friction of the kidney and causing complete and immobile fixation of the organ.

As I said in my paper, I do not believe it is necessary to make solid fixation of the kidney. All that is necessary is to relieve tension produced by the union of the bowel and kidney, and this I do by simply fixing the nephrocolic ligament, thus transferring the traction from the kidney and duodenum to a fixed point.

Dr. Hayd spoke of the delivery of the kidney as being necessary. It is essential if the patient has any symptoms of disease of the kidney, but I believe it is possible for any good diagnostician to make up his mind whether he has a suspicion of disease of the kidney or not. If he has, he should deliver the kidney and examine it. I believe, however, most of us can determine whether there is disease of the kidney or not before we operate. The urine will usually show it, and, in addition, a digital examination of the kidney with the organ held close to the wound by traction on my ligament, should suffice. If there is any sign of disease of the kidney, it should not be anchored until that question has been settled. If it cannot be settled otherwise, it should be settled through an exploratory incision. A pathological kidney should not be anchored. The probabilities are that in Dr. Hayd's cases which resulted in a cure, success was due to the fact that he grasped the fatty capsule at the lower part. If he grasped it below the kidney it would not tear, for the simple reason that in the network above, the fibers passing in various directions are weak. If you grasp them below, *en masse*, where they coalesce and come down parallel with each other, they have a good deal of tensile strength. If you put a hook around the fibers, you can handle them to better advantage, and can also pull the kidney into the wound and hold it there firmly.

Permit me to suggest that if Dr. Carstens will discontinue the use of the double tenaculum and seize the nephrocolic ligament, he will handle the kidney without wounding it, and to better advantage in every way.

Dr. Harlan spoke of the use of the peritoneum as a means of holding the kidney, bowel, and other viscera. We know that if we make use of the peritoneum for the purpose of stitching an organ to it, the peritoneum always stretches out in a little while, so that it is inadequate for that purpose. That has been demonstrated time and again. In my first experiments I went into the

peritoneal cavity. I found in one case a good mesonephron, which I brought up and stitched to the wound, and it answered very well. The kidney is now in fairly good position, and it is because I included with it the nephrocolic ligament which lies under the peritoneum.

As to there being no nephrocolic ligament in some cases, I mentioned in my paper that it varies in different subjects. In examining a cadaver I at first thought there was no nephrocolic ligament in that case, but by a further examination I found it was spread out upon the peritoneum in rather an unusual manner; it was very thin, but when I took hold of the peritoneum with it, it proved to be quite thick. In such cases it might be difficult to separate it from the peritoneum. It may be necessary to take peritoneum with it in order to get it, but it is there. It is found in the newborn infant as a fine bundle of filaments running downward, and in every case which I have examined it has been present. In the fat subject it is obscured by the adipose which distends it, but it is there, and by bunching it up together it can be used.

Dr. Harlan also spoke of impacted bowel being a cause of dislocated kidney, but it seems to me he had to beat around the bush a good deal in reaching a reason for his dictum. It is very much easier to believe that the impacted bowel pulls the kidney down because the heavy colon causes tension downward, than it is to get around it by saying that it produces congestion of all parts, heaviness, and the like.

DR. HARLAN.—How does an impacted bowel pull the kidney down where we have recurrent diarrheas?

DR. LONGYEAR.—The bowel is heavy and constantly acting. Of course, the tissues are weakened all around. Everything is relaxed, and the bowel is heavy because of inflammation, and there is a pulling, a constant traction resulting. A full cecum, too, is not incompatible with diarrhea.

Dr. Baldwin spoke of using No. 1 catgut. I have found in my surgical work that the different numbers of catgut differed slightly with different makes or preparations. I have been using Van Horne catgut for this work, because I consider it more reliable as to size and durability. I have experienced a little difficulty with No. 1 catgut, for when soaked a little while it breaks easily. No. 2, however, does not, and so I have become accustomed to the use of No. 2, which I boil before using.

DR. HAYD.—Would not that weaken the catgut?

DR. LONGYEAR.—It does not hurt it by boiling if contained in a sealed glass tube and immersed in alcohol. I put it in the sterilizer at the same time I boil my instruments.

Dr. Baldwin spoke of using flaps of the kidney for fixation and of his being a little afraid to use the nephrocolic ligament, which he had found weakened in his first case. There is a great

deal more strength in what nephrocolic ligament we can find than in the fibrous capsule of the kidney, which must be handled with care. After being stitched, the fibrous capsule, if given a little more tension than should be, will surely tear. When I did the old operation and sewed these flaps, when the patient vomited I found it would tear them out—and I am sure this does occur frequently. They are so tender that we cannot depend on them for that purpose alone; whereas, the nephrocolic ligament can be depended upon for strength with greater certainty.

Dr. Reed (closing the discussion on his part).—I have very little to add to what I have already said. The operation I have described simply evolved itself in my hands—it simply "happened" to me, and I am particularly satisfied with the results. As to the nonexistence of this ligament, which has been hinted at by some speakers, I wish simply to say that there were many years in my life when I, like they, would have said it did not exist. But now that my attention has been called to it I have never failed to find it. We are dealing, therefore, with new knowledge and we are just beginning to adjust it and I do not presume that any one would pretend that it has reached the finality of its application. It will probably continue to have new significance as our experience broadens. I am quite sure that everything that relates to the application of this knowledge in surgery is of practical importance.

Now, a word as to Dr. Longyear's paper and some details of his operation. I wish to call special attention to the fact that he has insisted that this ligament ought not to be divided in the operation which I have described. I have profound respect for Dr. Longyear, for his experience, for his judgment; but I am compelled to say that the more he explains why this ligament ought not to be divided, the more am I convinced that it should be divided. On this point, nothing convinces me so conclusively as his diagram. (Here Dr. Reed went to the blackboard and, using Dr. Longyear's diagram for illustration, continued.) You will observe that Dr. Longyear simply drags up a loop of this ligament and stitches it fast to the parietal peritoneum.

It is presumed to grow fast to the wall and to support the kidney by inflammatory adhesions. This is all very plain; but we must remember that Dr. Longyear has also explained to us that the kidney was drawn down in the first instance by the traction of the loaded cecum, the force being transmitted to the kidney through this ligament. Now, if the loaded cecum was capable of pulling the kidney down in the first instance, it is capable of exercising such traction that, sooner or later, it will teaze away these inflammatory adhesions with the result that the original condition will be reestablished. If, however, the ligament is divided and the lower half is fixed to the edge of the lower lip of the wound and the upper half is stitched to the upper lip of the wound, as in my

operation, any traction that may hereafter be exercised by the cecum will be intercepted and the kidney will be left independent of such influence. I am of the opinion that when Dr. Longyear thinks this matter over he will take my view of it.

DR. CARSTENS (closing the discussion).—My object in writing this paper was to call attention to the fact that there is no one definite or distinct cause for a loose kidney; that this ligament does not pull down all the kidneys, and that there is no one particular method of operating on these cases. A kidney gets loose of its own accord. It may become loose by a fall from a stepladder or by falling off a bicycle. There may not be anything else the matter with the patient. In a given case I may know the kidney is loose, but do not know what gave way, whether it was the nephrocolic ligament or something else. In such a case I want to fix the kidney because I believe the loose kidney with its intimate relation to the solar plexus causes irritation of the sympathetic system of nerves, and causes remarkably diverse symptoms in some cases, simply by pulling and dragging on the solar plexus. If such a kidney is once more fixed by appropriate surgical means, the patient will improve wonderfully and in a short time she may be well.

The question arises, How are we going to get at it? I have described to you my way of fixing a kidney. I think the simplest and easiest way to get at it is to go in from the back, cutting down through the layer of muscles. If we have here (illustrating) the erector spinæ muscle, and here the quadratus lumborum, the kidney is close. If you cut through at this point (indicating) you are on the kidney, or if we cut through the muscle at the outer edge we are on the kidney within half an inch. Are we going to make a large incision on the anterior portion of the abdomen and go into the peritoneum to see what we are going to do? I hold that the ideal way is to string it up just where it is; make an incision an inch and a half or two inches long, bring up the kidney with the finger, loosen up all the fatty substance and get the kidney separated and, if there is such a ligament as has been described, it drops down and the kidney is so loose that it cannot be pulled out afterward, stitch it anywhere that seems best. I sometimes make a flap of the fibrous capsule. I make a long cut through the capsule, split it up, or separate it with the finger. I make my flap here (indicating), stitch it up on this side, and the other one in front. I have made the kidney raw and right to the muscle. I can do this operation in ten or fifteen minutes. There is no need of making an interior incision and in cutting a lot of tissue, taking an hour and a half to do the operation, when it can be done in a few minutes.

As to the point to which attention was directed by Dr. Price, in my paper I emphasized the importance of floating kidney not being the only condition of which many of these patients complain. Even though some practitioners fix the kidney and it stays

in place, the patient is not well because a correct diagnosis was not made. The physicians did not look beyond the floating kidney.

DR. HAYD.—You have described a method by which you fix a kidney. Does not this operation frequently fail? I have tried to fix a loose kidney in the way you have described and it has failed in some cases.

DR. CARSTENS.—I cannot help that. I have yet to see a case that has been a failure in my hands after this method of fixation of the kidney. When I have encountered such a case, I will report it, but I have not thus far met with one.

An important point in connection with this subject is the question of diagnosis. A floating or loose kidney, with no other pathological condition, is a rare thing. Such cases are not very common. We generally have them complicated with gallstones, appendicitis, stenosis of the stomach, as well as other conditions that are often overlooked. I emphasize the importance of making a correct diagnosis in these cases. If we have a loose kidney to deal with, and the patient has a diseased ovary, we must remove the diseased ovary, just the same as we would remove the appendix if it were found to be diseased, or any other pathological condition that is met with. The object I had in presenting my paper was not so much to bring forward the technic of the operation as it was to speak of the importance of a correct diagnosis. Of course, the loose kidney may not be at the bottom of the trouble, and if we operate to fix it, and overlook other pathological conditions we will bring kidney surgery into bad repute.

PORRO-CESAREAN SECTION FOR PREGNANCY, WITH COMPLICATING FIBROIDS.

BY

J. F. BALDWIN, M.D.,

Columbus.

AT the meeting of this Association, in 1899, Dr. Rosenwasser presented an excellent paper, reporting four cases of uterine fibroids complicating pregnancy. In the opening paragraph of his report, he states that "previous to the advent of abdominal surgery and antiseptic midwifery, more than one-half of the mothers and two-thirds of the children died," in cases in which uterine fibroids constituted a complication in pregnancy. Under careful antisepsis and improved technique, he adds, the maternal mortality had been reduced to 37 per cent. in cases in which there was no intervention before labor. He therefore very truthfully says, "the management of this grave complication is still at fault. * * * The loss of mothers ought not to exceed 10 per cent.; the viable children ought nearly all to be saved."

The importance of this complication was very forcibly impressed upon me last summer:

Patient, aged 33½ years; married seven years; physician, Dr. Louis Kahn; February 21, was seen at her residence. Was then supposed to be about seven and one-half months advanced in her first pregnancy. She had consulted her physician some three months before, and he had at that time discovered in addition to the pregnancy the presence of a number of fibroids. The tumors had been growing steadily with the development of the uterus, and for a number of weeks the patient had complained of general soreness and tenderness throughout the abdomen, for the relief of which she had been given codeine, but with no very satisfactory results. She slept poorly, and looked haggard. Examination showed no fibroids in the region of the cervix, but a considerable number of fibroids in the body of the womb. One of these was pedunculated, but the others seemed to be interstitial. The largest fibroid was in the fundus.

My first impulse was to let nature take her course, and to be prepared for operative intervention in case of necessity. On thinking the matter over, however, and calling to mind as they occurred to me a considerable number of cases with which I had been connected during my professional experience, I was led to doubt the advisability of delay. I accordingly wrote for advice to a considerable number of leading obstetricians. The replies that I received were as a rule rather positive, but the writers were about evenly divided in advising delay or intervention. (I was rather surprised to find three Chicago professors in favor of waiting, while slow Philadelphia gave a similar number who advised Cesarean section.)

Incidentally, talking with some of the leading physicians of Columbus, I found that Dr. Loving could recall four or five cases, in two of which there was alarming post-partum hemorrhage, but both recovered. (I made a hysterectomy in one of these cases later, the patient recovering.) Dr. Rankin could recall one case of rupture of the uterus, the mother died, the child lived: one of post-partum hemorrhage, mother died, child lived: one of grave post-partum infection, but not fatal; one case of premature labor, with death of child, the mother living. Dr. Dunham had had three cases in his own practice. All of the children were born dead, and two of the mothers died of post-partum hemorrhage. He had seen two cases in consultation; in one the mother died of post-partum hemorrhage, the other died of ruptured uterus.

In my own field of observation I could recall three cases of rupture of the uterus, with three maternal and three fetal deaths. (No operation attempted.) Also (1) a hysterectomy for the removal of a large fibroid, with retained placenta above it, the fetus having been stillborn, and the mother septic. The mother recovered. (2) A hysterectomy for puerperal sepsis from necrosis of a large fibroid, temperature 105°. Patient recovered. (3) Two hysterectomies for dead fetus, with impacted fibroids. Both patients recovered. On the other hand, I had made nine Cesarean sections (one a Porro), without either maternal or fetal mortality.

Accordingly, after talking the matter over very freely with Dr. Kahn, and subsequently with the patient and her husband, the decision was promptly and unanimously in favor of Cesarean section.

The patient entered Grant Hospital March 31, our plan

being to operate April 7. April 3 I made a vaginal examination, and this satisfied me that labor was immediately imminent, and we changed the date for operation to the 5th. This was fortunate, as labor really set in the latter part of the night of the 4th, so that by morning the cervix was amply dilated for drainage.

The operation was made in the usual way, in the presence of the family physician, and others. Instead, however, of finding a single child present, we found twins, male and female. Owing to the tenderness of the patient's abdomen, no very careful examination of the uterine contents had been possible. Both children were quickly delivered, and both cried lustily. Both placentas were removed, and some gauze thrust down through the cervix into the vagina, partly to absorb any oozing, and partly to cleanse the canal from above down. A supravaginal hysterectomy was then made in the usual way, saving one ovary. Chromicized catgut was used for bringing the cervical flaps together, both round ligaments being implanted between the flaps, so as thoroughly to support the cervix and vagina. The appendix was found somewhat diseased and was removed; gall-bladder found normal. As the recti muscles were quite widely separated, and the abdominal walls greatly relaxed, the incision was closed with catgut in layers, with pretty wide overlapping of the fascia of the external oblique.

Examination of the specimen corroborated what had been previously determined. The main fibroid was at the fundus, and had a very thin layer of uterine tissue between it and the peritoneum, and a similarly thin layer between it and the mucous membrane. Whether this weak point would have resisted the strain necessary to delivery is a matter purely of conjecture.

The mother made a prompt recovery, and with her two babies left the hospital one month after the operation. All three are at this time alive and well.

There are three special dangers to which the mother is exposed in all cases of fibroids complicating pregnancy, unless the fibroids are so small as to be negligible. First, rupture of the uterus. This rupture may take place in a healthy portion of uterine tissue and be the result simply of the mechanical obstruction offered by the fibroid acting as an obstacle to the advance of the child, or the rupture may commence at the site

of the fibroid as the result of the thinning of the uterine tissues at that point. Second, post-partum hemorrhage from inability of the uterus to properly contract. Third, post-partum sepsis from necrosis of the fibroids, from insufficient supply of blood. If the mother survives these three dangers she still, in the majority of cases, has her fibroids with her as a continued menace, and probably requiring operative intervention later.

Cesarean section, followed by hysterectomy, presents practically only the dangers of an ordinary hysterectomy. There is probably a slight additional risk from the increased vascularity of the tissues, but there are present only the usual sources of blood supply and the control of these by ligature renders the vascularity of the tissues unimportant.

While the average mortality of Cesarean section during recent years is usually placed at 10 per cent., it is well known that a good many operators have operated on large numbers of cases with a mortality very much less than this. (I have had eleven without any mortality whatever.) A large part of the mortality is clearly due to delay in performing the operation. The patient being more or less exhausted by the long labor is not in good condition to withstand the shock of the operation or to resist infection. Cesarean section, with or without hysterectomy, made by a good operator, and with good hospital surroundings, should give a maternal mortality of not to exceed 5 per cent., and a fetal mortality too small for consideration.

The patient is prepared as for any other operation; the operator can virtually select his own time, and he has his assistants and surroundings in accordance with his own ideas If noninterference is decided upon, he may be called upon at a moment's notice to make a section for ruptured uterus or, and usually with futile results, to check a frightful post-partum hemorrhage, or, finally, he may be obliged to make a hysterectomy, when his patient is profoundly septic, for the removal of necrotic fibroids. Cesarean section is prompt positive, and curative, and attended with a very small mortality. Delay is uncertain and has a maternal mortality of 37 per cent., according to Rosenwasser, and a fetal mortality undoubtedly much larger than this. As between the two procedures, therefore, as between action on the one side and inaction on the other, it seems to me there can be no question as to choice.

UTERINE FIBROIDS COMPLICATING PREGNANCY.

BY
MARCUS ROSENWASSER, M.D.,
Cleveland.

THE older statistics, on which were based the indications for intervention in pregnancy complicated by fibroids, will always have a historic value, but they have become unreliable in view of the rapid strides of modern surgery. Statistics gathered from recent experience are still insufficient, hence each additional case placed on record serves its purpose in establishing a better and safer management of this grave complication.

The necessity for such additional records is emphasized in the face of a report just published by Esch from Olshausen's clinic ("Therapie des durch myoma uteri bedingten Geburtshindernisses," *Zentralbl. f. Gynä.*, Vol. XXX., 17, 1906), of which the following summary is condensed from the July number of *Surgery, Gynecology and Obstetrics.*, pp. 185–186:

CASE I.—The subserous myoma filled the greater part of the true pelvis and the pouch of Douglas. It was a foot presentation. After a labor lasting two days, the membranes having ruptured, the tumor had risen, rendering delivery possible. The baby succumbed on the sixth day to injuries sustained at birth, and the puerperium was complicated by thrombophlebitis with pulmonary embolism on the part of the mother.

CASE II.—Eighteen months later the same mother was at term. The child presented by the occiput. By this time the pelvis was entirely occupied by the tumor. After three days of labor without results, a classical Cesarean section was performed. At the same time the myoma was removed from the posterior uterine wall. On the twenty-first day both mother and child were discharged in good condition.

CASE III.—The pelvis being filled by subserous immovable myoma and labor having continued for twenty-four hours without results, Cesarean section with supravaginal amputation of the uterus was done. The child was saved and the mother made an uneventful recovery.

Comment on these cases is almost superfluous. In the first, the child died from injuries sustained at birth, and the mother barely escaped death from a dangerous complication. In the second, valuable time was lost from unnecessary delay, though fortunately without harm. The third case confirms the present trend of thought, to operate early in order to insure the best results.

With these preliminary remarks, I wish to report the following case of

PORRO-CESAREAN SECTION FOR FIBROIDS COMPLICATING PREGNANCY, SAVING MOTHER AND CHILD.

Through the courtesy of Dr. R. E. Skeel the patient was left in charge of Dr. F. S. Clark and myself. We examined her at my office on June 11 and July 23, 1906. Her age was 28; she had been married three years, and was a primipara. She had always enjoyed good health; her menses were regular until November 17, 1905; she had not menstruated since. Two weeks after she had missed her first period she consulted Dr. Skeel to ascertain whether she was pregnant. The doctor confirmed the pregnancy, but found a hard, nodular tumor of the size of a hen's egg at the junction of the cervix and lower uterine segment. The tumor grew so rapidly after the third month that it would probably constitute an obstruction to delivery at term. At the time of our examination she was about six months pregnant. We found a hard, immovable tumor of the size of an infant's head, located at the junction of the cervix and the lower uterine segment in the right half of the pelvis, obstructing the greater part of the pelvic entrance and the hollow of the sacrum. The fetal head could be felt above the brim. At the second examination in July, the only change noted was a slight enlargement and a softening of the tumor. The patient was in excellent physical and mental condition, though she had been advised of the probability of an operation For years she had been subject to "hay fever," which recurred regularly on August 8. According to Dr. Clark's computation, her term would end about September 5. We decided to await the beginning of labor before intervention.

On the evening of August 8 the waters broke spontaneously; there were no pains. The patient was removed to St. Vincent's Hospital early in the morning of August 9. The examination revealed the cervix an inch in length, patulous, and protruding

from it a three-inch loop of pulsating cord. The tumor now occupied the entire pelvic entrance, resembling a presenting head. There were occasional slight pains. To save the child immediate operation was decided on.

Operation.—The section, under ether, was performed in the presence of Drs. N. Stone Scott, W. H. Humiston, J. E. Cook, and others; the house staff acted as assistants. Dr. F. S. Clark took full charge of the child at and after delivery. The incision, from midway between the ensiform cartilage and the umbilicus to the pubes, was about ten inches long. After packing gauze all around, the anterior uterine wall was incised from fundus to bladder attachment. Hemorrhage was not violent and was easily controlled by a few clamps. There was no amniotic fluid nor visible membrane; the back of the fetus came first into view, covered with a thick coat of *vernix caseosa*. Grasped with both hands around its sides, the child was lifted out of the uterus without difficulty and passed to Dr. Clark after the cord had been clamped and cut. The placenta presenting in the uterine incision was next removed without appreciable loss of blood. The balance of the operation consisted in the usual supra-vaginal amputation of the uterus for fibroids, attaching the broad ligaments to the cervical stump and covering all raw surfaces with peritoneum. The ovaries were found healthy and not removed. The abdominal incision was closed in two layers; the peritoneum, together with the transversalis fascia with catgut, and the remaining layers by alternate through and figure-of-eight silkworm gut sutures, the latter passing through skin and fascia only.

The tumor was a subperitoneal myofibroma, situated in the lower right segment of the uterus, occupying the posterior wall. There were several small intramural and subperitoneal fibroids scattered in the body of the uterus.

Excepting a mild rise of temperature during the second week, with a moderate exudate about the stumps and in Douglas's pouch, convalescence proceeded normally until the patient was about to be discharged at the end of the fourth week. At this time she was taken with sharp pain in the left groin, which gradually extended down the limb, with an almost imperceptible edema and an evening rise of temperature of 1°. A few days of additional rest with the foot of the bed elevated and the limb bandaged, sufficed to dispose of a very light phlebitis. She left the hospital at the end of the fifth week entirely recovered.

The "hay fever" made its appearance about a week after the operation, but was so slight that it did not constitute a complication.

The baby was asphyxiated at birth and required a prolonged effort at resuscitation. It weighed five pounds, was fairly well developed, but was not strong enough to take the breast. It had, however, gained two pounds before leaving the hospital.

DISCUSSION.

Discussion on the papers of Drs. Baldwin and Rosenwasser.

DR. E. GUSTAV ZINKE, Cincinnati.—It is doubtful whether an obstetrician of reputation would not act in cases of this kind as Dr. Baldwin and Dr. Rosenwasser have done. That intramural fibroid tumors which, probably, escape diagnosis and are not recognized very often during the progress of pregnancy will not complicate gestation, there is no doubt. I have delivered two women in whom tumors were discovered after they were delivered, but not before. The tumors were intramural, very small in size—one the size of a walnut, and the other the size of a hen's egg. They were more or less flattened, but they did not constitute a very tangible elevation upon the anterior surface of the uterus on which they were situated.

It is different, however, when we deal with interstitial fibroids involving the entire uterine wall. The first case I saw (about twelve years ago) was one of this character. The patient had been in the hands of a midwife. When she failed to deliver the woman, Dr. Koehler was called in to assist who, on examination, felt a foot presenting. When he came upon the scene the membranes had already ruptured and he made an effort to bring down the foot and deliver, but failed. He asked another doctor, in the neighborhood, to see the patient who, in turn, made an effort to deliver by pulling down the foot. He also failed, the real nature of the case not being recognized at the time.

At last, I was called, and received full credit for the final and fatal result. On examination I noticed the cervix was exceedingly thick; it seemed to me an inch in thickness; it filled the entire pelvic brim, and it was impossible to insinuate my finger between the prolapsed foot and the uterus. I could not hear the fetal heart. There was no evidence of fetal movements. The woman was in a very bad condition, and it was simply a question as to whether we should permit her to die undelivered or make a Cesarean section. This was at the patient's home. The kitchen table was improvised as an operating table and a hurried Cesarean section was performed under circumstances not the most favorable, yet the instruments and dressings were sterilized. The abdomen

was opened. The uterus was very large. The woman had reached term. I found that the entire uterine wall measured nearly one inch in thickness. A dead fetus was delivered, one that had been dead for some time. The patient died within twenty-four hours of shock and asthenia.

While at the present time I do not think we can take a different stand in regard to this subject from the one Dr. Baldwin and Dr. Rosenwasser have taken, I believe that if an early diagnosis of uterine fibroid is made, even where the pregnancy is far advanced, the condition should be considered an extreme source of danger to the woman. Much, of course, will depend upon the character, size, and locality of the tumor. I do not think there are many cases of advanced pregnancy complicated by submucous fibroids. I never saw one except in connection with early abortion; in the intramural and the subperitoneal varieties, if pregnancy occurs, the fetus may be carried to the later months of gestation and even to the end of term. Cesarean section, when necessary, gives the mother as well as the child the best chance to live if the operation is performed under aseptic conditions, and performed by one who is familiar with its technic. Hysterectomy, following Cesarean section, does prolong the operation somewhat, and to that extent adds to its dangers.

DR. O. H. ELBRECHT, Saint Louis.—I have listened to both papers with great interest, for it has been my good fortune to have met a few similar cases, and since the subject of both papers is limited to fibroids of the pregnant uterus, I shall try to confine my remarks to that phase of the subject. I have seen five cases of fibroids of the pregnant uterus, that were not discovered until term and two of them were not found until after the delivery of the placenta. The tumors were situated either in the posterior or anterior wall or the fundus and gave absolutely no trouble and, judging from their mobility, were perhaps subperitoneal. This forces one to conclude that, in many of the cases operated, the fibroids would prove absolutely harmless if left alone. This, however, is unsafe to follow as a working rule, hence we have made this distinction at our hospital: if the tumor is impacted (and Dr. Rosenwasser brought out this point clearly), there is every reason to operate. If we have a small subperitoneal fibroid, and this can only be guessed at by the extent of its protuberance, then there is no special indication to remove it, for those of such size and type seldom cause any trouble.

If, on the other hand, we have multiple fibroids of sufficient size, then no one can tell to what variety they belong, and it is best to explore and remove them, especially those that are interstitial, for these are the ones that are really dangerous in pregnancy. Even with such classification it is always difficult to decide just where to draw the line, and perhaps the safest of rules would be to explore in all cases. All interstitial fibroids that can be diagnosticated during pregnancy should be removed,

because of the probable danger of rupturing the uterus during labor. I know of one case that occurred in another physician's practice, in which the uterus was ruptured as the result of such a fibroid. If fibroids are small, we can take them out and leave the uterus; but if they are large, it is certainly best to do the Porro operation. The tendency at present, I believe, is very strongly in favor of Cesarean section, if it is possible to save the uterus. I have removed but one fibroid during pregnancy and the patient went to term. I have also removed gallstones and a hydronephrotic kidney during pregnancy within the last three months and the women went to term without any trouble. I am convinced that operations in justifiable conditions during pregnancy are not as dangerous as was formerly supposed, and believe that this is the present opinion of even the most experienced conservative men. I would like to ask Dr. Baldwin how large the fibroid was that he removed?

DR. BALDWIN.—There were several of them, the largest one being at the fundus. I should say there were a dozen of them altogether.

DR. ELBRECHT.—I have seen but one patient in whom a large fibroid obstructed the pelvis. The cervix in this instance was pulled up, the vagina was drawn forward, and the pressure on the rectum was so great that the patient could not have a movement of the bowels, unless she was given an enema or sufficient salts to produce liquid feces. Cesarean section was done in this case with a perfect result, the fibroid being removed at the same time. Necrosis from the presence of a fibroid tumor at term is, indeed, rare pathology and I am glad to learn of this case which occurred during pregnancy; because we would least expect it at such a time, when the blood supply to the parts is so greatly increased.

DR. ZINKE.—At what time did you operate when you removed the fibroid during pregnancy?

DR. ELBRECHT.—About the fifth month. The tumor was a small one and was situated on the posterior uterine wall. I thought at first it was an old pus tube or an ovary held there perhaps by firm adhesions. The patient could feel it and it annoyed her considerably, but it turned out to be a small subperitoneal fibroid.

DR. ZINKE.—How large was the pedicle?

DR. ELBRECHT.—There was no pedicle to speak of. It may have been half an inch in thickness.

DR. ZINKE.—How large an incision was required to remove the fibroid?

DR. ELBRECHT.—It was removed through an inch and a half or two-inch incision.

DR. GUENTHER.—What was the indication for removing that fibroid?

DR. ELBRECHT.—I thought it was a pus tube or ovary and did not diagnosticate it as a fibroid until the abdomen was opened. I can cite another case; one of Dr. Schwarz's, a Fellow of this Association, who took out a fibroid at the seventh month, which was impacted in the pelvis and attached to the posterior uterine wall. His incision was three and one-half inches long at a point corresponding to Bandl's ring, and he sewed the incision with catgut. This woman went on to term without any abortive symptoms. The reason I cite his case is to show that even large fibroids can be removed late in pregnancy, without doing Cesarean section, and thus give the fetus the benefit of more intrauterine life. If a patient like this one, however, should be in labor, it would be necessary to do the Cesarean section or Porro operation, but if operated before such time, a fibroid can safely be removed, allowing the uterus to remain unopened.

DR. ROBERT T. MORRIS, New York.—I operated in one case for the removal of a subperitoneal fibroid at the fifth month of pregnancy. The patient was having miscarriage pains about once in fifteen minutes. I operated with a desperate chance of trying to save the child. The woman was nearly fifty years of age, this was her only pregnancy, and a good deal depended on the birth of a child in the family. The labor pains ceased after I had removed a fibroid about as large as my fist, the woman went to term and was delivered of a living child.

DR. PRICE.—Was the tumor in the pelvis?

DR. MORRIS.—It was outside the pelvis, was as large as a fist, and could be felt plainly through the abdominal wall.

DR. JOSEPH PRICE, Philadelphia.—The authors of these interesting papers have overlooked much valuable literature on the subject that will be found in our Transactions, together with the exhibition of very beautiful specimens. In previous years in the history of this Association cases of interstitial, subperitoneal fibroids have been reported as complicating pregnancy, some of the tumors being large enough to fill the birth passages. Some of these tumors were pedunculated. Fibroid tumors complicating pregnancy are at present quite common. I listened to a valuable contribution night before last at Pittsburg, on fibroids and monstrosities complicating labors. It was a contribution of real scientific value and interest, with the exhibition of very remarkable monstrosities. The patients in three or four instances, after trying, tedious deliveries, were all saved. The children were sacrificed, and should have been. But I think they were dead before they were delivered. One of these labors was not only complicated by a dead monstrosity, but by multilocular fibroids. This obstetrician, a man of experience and good judgment, succeeded in delivering a huge monster without a single accident or complication during or following the labor. Real, practical obstetricians at the present time are rare. The good old obstetrician is a thing of the past.

Little has been said about Philadelphia, and I am very glad of it. At one time they attempted to make Cesarean section the normal method of delivery in that city, but it didn't work. (Laughter.) Some of you probably recall the valuable contribution of Sir Spencer Wells at the First International Medical Congress, held in Washington, on "Cystomas Complicating Labor." All of the patients, like the case reported by Morris, recovered and went to term. When recognized early and falling into the hands of skilful operators, like Morris and others, these patients with pedunculated fibroids can be operated on safely, allowed to go to term, and without premature delivery or abortion. I have said on previous occasions, and I say so again, that when we have to deal with a pedunculated fibroid in the pelvis, complicating advanced pregnancy, it can be removed by vaginal incision. I have operated on a good group of these cases. It is important in several instances to save the child. In most of them I have found an error has been made in the diagnosis; that fibroids complicated the birth passage, with a dead child above. Here, I want to say, that we are in error in our nomenclature. A Porro-Cesarean section is a supravaginal extraperitoneal hysterectomy, an operation that is not done very often, if at all, at present. I would not hesitate to do it in a case in which I thought it was indicated. But if the old Porro operation is done, all the patients can be saved. But by this modern section the patients are not all saved. One gentleman reports nine Cesarean sections, with catgut closure of the incision, with three of his patients bleeding to death. If I should do in this city nine supravaginal extraperitoneal Porros to-day, I would feel just as comfortable and as happy as possible. It would not deter me from eating three good meals a day, because these patients when operated by that method get well. I never knew of but one or two patients who had undergone supravaginal extraperitoneal hysterectomies that died. I have forgotten whether labor in these instances was complicated by fibroid tumors, or whether it was complicated by a deformity, but Elliott Richardson many years ago did the first Porro operation that was done in this country, shortly after Porro reported his work. He saved mother and child. He did his Porro operation by the elastic ligature method with darning needle and pins.

I recall having asked Dr. Vander Veer to witness a Porro operation. A good physician had an Irish woman in labor for two days. Here, let me say, that the modern conventional life of late marriages predisposes women to these complications. You will find them in large numbers, particularly among the domestics, and that is the reason I allude to the Irish woman. Irish domestics, as a rule, marry late in life. Most frequently women, at the age of twenty-seven, twenty-eight, and thirty, begin to grow fibroids, if at all. They are just as common as gallstones or appendicitis, and the obstetrician should deal with them scientifically. To return to the case of the Irish woman, she had been in labor for two days, and had a tumor which filled the birth canal. The

physician in charge had tried forceps several times and failed. I recognized the fibroid at once; and there was also a bad-smelling discharge. The woman's pulse was bad; even her whole condition was bad. I stepped to one side, explained the nature of the trouble, and said that an extirpation of the tumor would be necessary. This being consented to, in two or three hours she was on the operating table, and I delivered a big uterus, a dead child, and pelvic fibroids, applying the serre-nœud, cutting all away. You will find the specimen illustrated in one of the early volumes of our Transactions. The woman made an excellent uncomplicated recovery.

If I took a series of nine similar cases, in some of them I would try diligently to save the uterus. It is in pedunculated fibroids that I should attempt enucleation, keeping as far away from the uterus as possible, and believing that we can do so without any risk of hemorrhage or of precipitating a premature labor. In Dr. Zinke's case he had a septic uterus to deal with and, considering the fact that there was beginning infection or sepsis, the uterus should have been removed. Had this been done, he might have saved the life of his patient. This is a very important subject, and I am sorry that I did not bring along some notes so as to discuss it more fully.

Dr. E. Gustav Zinke, Cincinnati, Ohio.—I want it distinctly understood that I do not advocate Cesarean section unless the operation gives both mother and child the best chance for life. Let me say a word or two in explanation of the case I related when I opened the discussion. The woman was septic and very much exhausted at the time I saw her. The preparations for the operation were hurried; the surroundings of the patient were of such a character as to be unfavorable for a prolonged operation. If I had made a Porro operation under the circumstances, she would have died on the table.

Dr. Edward J. Ill., Newark.—I would like to make a few remarks on this subject. I do not think that the impression ought to go out from this Association that every woman who has fibroids ought to have the uterus removed or a Cesarean section done. Let us draw the indications very closely. If you have obstruction in labor, then do it. But again and again I have looked for an obstruction; I knew fibroids were present, and then I always remember what my friend and teacher, the late Dr. Bandl, would tell me about the retraction of the cervix. Within a few days before labor the tumor retracts, and labor goes on without difficulty. Of all the cases I have seen (I do not recall how many) I have had only one chance to do a Cesarean section for fibroids. I certainly think that the extraperitoneal Porro has an excellent place in surgery. It must be the exception, however, when it is done. In those cases in which someone has tried to effect delivery for hours, one should not open the uterus and let the fluid contents escape into the peritoneal cavity, but

rather should bring the uterus out, apply a ligature or the serre-nœud, and sew up the peritoneum before the uterus is cut away. Such a woman will have a chance to get well.

DR. BLUME.—Do I understand you to say that you would sew up the peritoneum before you opened the uterus?

DR. ILL.—Yes, in the Porro operation. The removal of the fibroids from the pregnant uterus is perfectly feasible if we cut the uterine tissue only and do not open the uterus. I have removed a fibroid which weighed sixteen pounds, because of the severe pain it caused, and closed the incision with a continuous deep and superficial suture. The woman conceived and went to term. This case shows that there is a chance for conservative surgery in the line of fibroids complicating pregnancy. But surgery, in my judgment, is a rare thing for fibroids in pregnancy. The two cases I have detailed represent all operations I have done in pregnancies complicated by fibroids.

DR. FREDERICK BLUME, Pittsburg.—With reference to the case of monstrosity mentioned by Dr. Price, I will say that this patient was delivered by my assistant, Dr. Ziegler, in a very careful manner. I operated on the patient half a year afterward for the removal of multiple fibroids. This was an illustration of the fact that in cases complicated with fibroid tumors delivery even of a monstrosity is possible without resorting to a serious operation, and thus endangering the life of the patient, if done by skilled hands.

With regard to the Porro-Cesarean section, I am glad to hear Dr. Ill and Dr. Price still recommend the original Porro operation under certain conditions. About ten years ago I reported before the Pennsylvania State Medical Society a case of Porro operation done for a pelvic tumor complicating pregnancy at term, and was criticised for not having done the typical supravaginal hysterectomy. When I performed that operation, some twelve or fourteen years ago, we did not hear so much about supravaginal hysterectomies. I do not hesitate to say that the original Porro operation in bad cases, where time is an important factor, may be a life-saving operation, as it can be done much quicker than the modified Porro—a typical supravaginal hysterectomy.

The question, how to treat cases of fibroid tumors complicating pregnancy, is still unsettled. There is yet diversity of opinion as to the indication for surgical intervention, and as to the time when such intervention is advisable.

It is well known that many women suffering from fibroid tumors have normal deliveries. The fear of post-partum hemorrhage is greatly exaggerated. The danger in such cases depends upon the size and the location of the tumor. Surgical intervention becomes necessary when the tumor is found to be obstructing the pelvis. If the condition of the patient permits delay, intervention should be postponed in the interest of the child to, or near, term. With Dr. Price and Dr. Ill, I do not like the impression to go out

from this Association that every woman who has a fibroid complicating pregnancy should be delivered by Cesarean section. Such teaching I would consider to be dangerous, notwithstanding the statement of some surgeons that in the Cesarean section we have an easy and safe method of delivery. What the average mortality from this operation in this country really is, is not known. Some authors estimate it to be over fifty per cent.

DR. HUGO O. PANTZER, Indianapolis.—I have had eight cases of fibroid tumors complicating pregnancy to deal with, which I think are sufficiently interesting to report. All of them shall be reported in due course. Three I will cite briefly, having a bearing on the question of indication for operation. This really is the moot point of this subject. The first patient I was called to see ten days after parturition, who had given birth to a living child, after protracted labor, and at first was unattended by fever. Recently, however, fever had come up with a copious ropy discharge from the vagina. My examination revealed a gangrenous fibroid in process of detachment. Its complete removal was followed by uninterrupted recoverv. I accept from the previous afebrile course of the child-bed, that gangrene from malnutrition, rather than infection, caused its expulsion. The patient since has passed through another pregnancy and was delivered without trouble. The second case might be adduced to controvert the view expressed by Dr. Zinke, that no such thing as a submucous fibroid exists. My case may be regarded as giving the clinical evidence of such a condition. I was called to deliver a woman after she had been in labor about forty-eight hours. A large tumor was found after birth, located in the fundus. Within four days this tumor gave evidence of sloughing, and twenty-four hours later I removed it, per vaginam. The attending sepsis was of grave degree, and persisted for several days. The final outcome was a perfect recovery.

The third case was a woman forty-two years old, who was pregnant for the first time. She was advanced five months and the urine showed chronic nephritis. She had a fibroid located posteriorly at the height of the internal os, the size of an orange, or greater. Efforts by massage to displace it from the pelvis were unsuccessful. The patient was placed under my daily observation at the hospital. Under treatment the urinary conditions improved greatly. When labor, at term, was well under way, and the tumor did not rise out of the pelvis, a Cesarean section was made. The operation, after full preparation and assistance, was speedily done, and patient left the table in seemingly unimpaired condition. The child, of good development and vigor, lived upward of a year, when it died of an infectious disease. The urine of the mother after the operation was secreted in scant quantity, and revealed the evidence of a full-blown return of the nephritis. Uremia and suppression of urine supervened at the end, the sixth day following the delivery. The wound healing had been satisfactory, barring a single stitch abscess of seeming little significance.

DR. JOSEPH PRICE, Philadelphia.—I have seen a few cases of intrauterine sloughing fibroids early in my obstetrical experience, which were recognized in delivering the placenta by the Credé method. These fibroids were small. We know very well that we have the interstitial, the submucous, and the extraperitoneal varieties of fibroids. I recognized those fibroids, and the women were scared of their retention; but where a second pregnancy followed, I noticed the fibroids commonly vanished. Early in my professional life I urged these women to complete the cycle of reproduction and conceive.

In speaking about sloughing fibroids, I wish to say that an old nurse, and a very valuable one, from Vienna, O., married at the age of thirty, and was subsequently delivered of a fine boy. I saw her only a few days ago. She was delivered by Dr. Hayes, now dead, and a violent sepsis followed. He wrote me about her. She married late in life. He explored the cavity of the uterus and found a sloughing fibroid projecting from the mucous coat. However, she made a slow and tedious recovery, but has never conceived since. These are terrible cases, and many of them die of sepsis, the physician having no solution for their precise nature. If physicians had made careful intrauterine examinations in these cases undoubtedly they would have found the cause. These cases of sloughing fibroids are not uncommon.

DR. J. HENRY CARSTENS, Detroit.—These cases vary so much that we cannot lay down any general rules. We often detect fibroid tumors when women are pregnant. If we find a small fibroid in the cervix, we can sometimes remove it per vaginam when the woman is pregnant, and save her a severe labor. Sometimes the fibroid is large, situated higher up, and the woman may have but one fibroid in the broad ligament that will interfere with labor; we can then operate on her, whether she has advanced three or six months in pregnancy, and save her future trouble. With a woman in labor who has fibroids we cannot lay down any definite rule of conduct. If the uterus is full of fibroids, and we have reason to suspect that there are a number of little ones, it is better to do an abdominal or supravaginal hysterectomy. If you are required to do a Cesarean section, and you have a large fibroid of the uterus, it seems to me you ought to remove that fibroid and endeavor to save the uterus. I used to be a strong advocate of the Porro operation, and with good reason. If we have a woman who has been in labor for three to four days, who has been handled by all kinds of people, so to speak, who is probably septic or will be so, and who will probably die if we leave the uterus, we may save her life by removing the uterus.

I never do a Cesarean section except in such a case as I am about to relate. I recall the case of a woman whom physicians attempted to deliver by craniotomy. She had had three or four difficult labors, and finally again became pregnant. Three different physicians were called in to see her, and for forty-eight hours the

woman had been worked at in all kinds of ways. They tried to perform craniotomy; they could not do so successfully. Later they sent for me, and I telephoned to have the woman brought to the hospital, where I delivered her by means of a Porro-Cesarean section. That woman, I am sure, would have died if I had not removed the uterus. Whenever I meet that woman she says to me, "Doctor, if you had only saved my womb, so that I could have another child!" That expression comes back to me whenever I do a Cesarean section. I ask myself whether it is the right thing to remove the uterus or not, and so I am inclined to remove fewer and fewer uteri, especially if the women are young and have had no children, or if the first child is dead. I try to save the uterus and give such a woman one more chance to become a mother.

DR. BALDWIN (closing the discussion on his part).—Dr. Zinke is one of those to whom I wrote in regard to this subject, and you are familiar with his ideas from what he has said. I have never felt very kindly disposed toward myomectomy during pregnancy. I have never found a case in which it seemed to me to be advisable. If we have a patient in whom a subperitoneal fibroid complicates pregnancy, unless the tumor is very low down, I should expect the woman to go on to term without harm from the tumor. It is not necessarily the size of the tumor that causes trouble. In one case mentioned in my paper, in which death occurred from rupture of the uterus, and which I saw at the autopsy, the fibroid was single. Though it was small, there was a thinning of the uterine wall around the growth, and rupture started at that point. I say in my paper that many of the fibroids which we see in connection with pregnancy are so small or are so situated that they may be regarded as negligible. In other words, we need not pay any attention to them, as they are so small the women will go safely to term, and after they have been delivered we may not be able to find any fibroids at all.

The danger of necrosis of fibroids is something we cannot anticipate. It may come with a small tumor; it may come with a large one. I should be inclined to expect it in subperitoneal fibroids rather than in the interstitial variety, where the blood supply would be better.

One of the speakers referred to the point that submucous fibroids were a hindrance to pregnancy. Dr. Tate reported last year several cases of submucous fibroids in which pregnancy had taken place. If a subperitoneal fibroid is low down, so that we would not know whether it would rise above the pelvis during the latter months of pregnancy, a myomectomy would be the choice of operation, making it carefully so as to keep as far away from the uterus as possible, handling it as little as can be done. I have done two ovariotomies during pregnancy, and in so doing hardly touched the uterus. In one instance I made a double ovariotomy in a woman who was three months pregnant. The abdomen was filled with three large tumors. I was not as careful as I ought to

have been, and probably left a little ovarian tissue outside the ligature, and the woman happily had three children afterward.

In regard to the use of catgut for closing the incision in cases of Cesarean section, I always use chromicized catgut, as this will not soften, and then allow the wound to gape. We had a case in Columbus, in which an excellent physician some years ago closed the incision with ordinary catgut, and at the autopsy the incision was found gaping open from end to end.

Technically, a Porro operation is one in which the stump is fastened into the lower angle of the incision. I reported the first Porro operation that was ever made in Ohio. It was the ninth case, according to Harris' statistics, in the United States, and the third that was successful. It was made at two o'clock in the morning in a cellar, with two kerosene lamps for light, and two untrained assistants. That woman I am very sure would have died had I made a hysterectomy and dropped the stump. I operated rapidly, putting a rubber ligature around the stump, with transfixing pins, as directed by Tait. The woman had a hernia following the operation, and she has it now. Of late, however, physicians have been quite in the habit of regarding a Porro operation as a hysterectomy made at the completion of pregnancy, without regard to the technic employed, and in the title of my paper I use the word Porro in that sense. I should still use the typical Porro, I think, were I obliged to do a Cesarean section in the midst of sepsis, because I think it can be done with less danger of contaminating the peritoneum than can an ordinary Cesarean section in which a septic uterus would be left behind.

The point in my paper is that we should not neglect these cases, or leave them to nature. They should be seen by a surgeon. If the tumors are so situated, or are so small, that they may be neglected, well and good; but if they are so situated that they will likely give trouble, they should be removed perhaps by myomectomy, or later by Cesarean section, with hysterectomy. If interstitial, and of such size that thinning of the uterine muscle is probable, it seems to me Cesarean section with hysterectomy is the safest operation to do.

It is possibly true, though I hope not, that the mortality, as stated by Dr. Blume, in this country is fifty per cent. from Cesarean section. If it be true, that must include operations that are made under the most unfavorable circumstances and by the most unqualified men. I cannot conceive of such a mortality when the operations are done under proper hospital surroundings and by competent surgeons. It does not seem to me possible that the death-rate can be as high as stated. The statistics published in the last ten years are much more favorable, so that in my paper I put the mortality at ten per cent. The trouble is these operations are made sometimes when the woman is septic and the child dead. In one case that was operated on in Columbus the child was long dead, the pelvis normal, and the woman moribund. When the operation is done under such circumstances it is brought into dis-

repute. On the other hand, I have supreme contempt for a surgeon, or one who pretends to be a surgeon, who has any regard whatever for his statistics when brought face to face with patients who need operation. Statistics are utterly valueless, if cooked up and made. I understand that some foreign surgeons who have such elegant statistics uniformly refuse to operate on any woman upon whom forceps has been used, or who has been subject to repeated examinations. If she is not septic, they consider she will be, and they will make a craniotomy, and if the woman then dies it is considered the Lord's doings, not theirs; thus their previous statistics are kept inviolate.

With the advantages of modern methods, the child can almost uniformly be saved. The fetal mortality should not exceed five or ten per cent. In one operation I made the woman had a narrow pelvis, with a large child. She was well along in years, and had been in labor eight days. She had a temperature of 102°, pulse 130, with a hot, dry vagina. The operation was made in the night, but, barring some suppression of urine, she made a perfect recovery.

In regard to subjecting women who have had one Cesarean section, on account of deformity of the pelvis, to a second or third operation, we can recall reports in which women have had a third, or even a fourth successful Cesarean section. There are many cases in which the women have not survived a second operation, but by a curious dispensation of Providence these cases do not get into print. I leave this matter to the woman and her husband. I say to them, I can remove the tubes, so that you will not become pregnant again, if you do not wish to subject yourself to this danger a second time. I think the majority of our women in central Ohio, if they had had one child delivered by Cesarean section, and found themselves pregnant again, would go to a neighbor around the corner and get rid of it. I do not think they would subject themselves to operation a second time. In one of my cases the woman had been delivered by craniotomy, and nearly died; but the maternal instinct in her was strong, she wanted a baby, and came to me for Cesarean section. But she was perfectly willing not to have any more, and both she and her husband requested that I remove the tubes, which I did.

DR. ROSENWASSER (closing the discussion).—Dr. Baldwin has so completely covered the ground in his closing remarks that there is very little left for me to say. The discussion has extended beyond the limits outlined by the title of the paper. It has covered the entire subject of Cesarean section.

I consider Dr. Price's criticism of the name of the operation correct. Cesarean section, followed by supravaginal hysterectomy, would be the proper name. I also agree with him that the original Porro operation should be done in septic cases.

The criticisms that have been made do not apply to my case. In my argument I referred to the eight cases previously reported to this Association in 1896 and 1899, and to the discussion of the

same as published in the Transactions of 1899, in which it was pretty well agreed that each case was a law unto itself. We cannot lay down any indication for operation, or for nonintervention, except the case itself be thoroughly followed up and the indication based upon the conditions present. We have not advanced beyond this conclusion since that time.

In addition to the three dangers Dr. Baldwin has enumerated in his paper, there is one other that has not been mentioned—a danger which I encountered and mentioned in my paper of 1899. This appeared in a case in which the uterine fibroid projected into the cavity of the uterus. The tumor was not submucous, but interstitial. The obstetrician had delivered the woman safely, but her delivery was followed by sepsis. I saw her five days after delivery, and found her deeply septic. It was found that the entire placenta was retained above the fibroid, and owing to the projecting tumor it was not accessible. The uterus containing fibroid and placenta was removed by hysterectomy, but the woman died of sepsis in twenty-four hours. The additional danger is therefore that even after safe delivery of the child the placenta retained above the fibroid and inaccessible, may lead to septic infection of the patient.

ABDOMINAL SECTION FOR TRAUMA OF THE UTERUS.

BY

CHARLES E. CONGDON, M.D.,

Buffalo.

Puncture of the nonpuerperal uterus, with prolapse of bowel; violent seizure and tearing away of sixteen inches of gut; immediate abdominal section, repair of uterine lacerations; intestinal anastomosis; recovery.

In presenting this subject for consideration I will offer the brief history of a recent case upon which I operated.

Mrs. L., aged 39 years, mother of two children; the older 2 years, the younger 5 months, entered the City Hospital April 7, 1906.

She had been suffering from vague abdominal pain and discomfort for some months prior to her last pregnancy, more marked since the birth of the last child.

Her physician, thinking it probable that she was suffering from an endometritis or possibly from some retained secundines, but more particularly in the line of diagnosis, had given her an anesthetic, dilated the uterus and curetted. Believing that he felt some growth foreign to the uterine cavity he attempted its removal by the use of the placental forceps. He grasped the growth, made traction, and twisted. When it gave way and was removed he discovered that he had 40.5 cm. of small intestine. Fully realizing the seriousness of the situation he brought her immediately to the hospital. Her condition on arrival was one of shock, temperature subnormal, pulse 140.

On opening the abdomen, which was done immediately, through a median incision 11 cm. long, blood gushed out and it was found that the entire abdominal cavity, including the pelvis, was filled with it.

That the hemorrhage was recent was evident from the fact that little clotted blood was found. There were two lacerations of the uterus; one through the fundus extending from tube to tube, the second through the uterus and broad ligament on the

left side. These lacerations were bleeding freely. Their surfaces were at once brought together with catgut sutures, which completely checked the hemorrhage from those parts.

Next it was found that 40.5 cm. of the ileum was missing (which corroborated the doctor's statement) beginning at the ileocecal valve and extending upward. Hemorrhage from the mesentery had ceased, in spite of the laceration of large vessels. The mesentery was ligated with heavy silk and trimmed; the ileum also was trimmed and the opening at the ileocecal valve was closed because it was so lacerated and contused as to render it unadvisable to form the anastomosis at that point. An opening was made farther up in the cecum and the ileum connected to it with a Murphy button.

The abdomen was flushed, dried, and closed without drainage. The subsequent history of the case can be briefly stated by saying that she made an apyretic recovery, the button passing on the thirty-first day, and the patient going home in five weeks in perfect health.

The cases in literature may be classified as follows:

A. Early Cases at or Near Term Before the Era of Abdominal Operation or of Unusual Operative Interference by Instruments, Within the Uterus.—The numbers refer to the cases as listed in the bibliography.

1. Baudeloque. No details. Death.
2. M'Reever. Spontaneous rupture during labor, 122 cm. intestine, fecal fistula, recovery and subsequent pregnancy, normal labor.
20. Robiquet. Spontaneous rupture during labor, forceps extraction, small intestines and omentum, reposition immediately, interrupted by uterine contraction, again on second day. Recovery.
21. Radcliffe Wood. Seventh month, putrid fetus, spontaneous rupture. Recovery.
22. Currie. Breech presentation, spontaneous rupture, recovery.
23. Murphy. Term, spontaneous rupture, child delivered by forceps from abdomen. Death from intercurrent affection.
24. Birch. Same version, perforation of cranium. Recovery.
25. Collins. Same.
26. Hooper. Same, rupture after ergot, fetus extracted by hook from abdomen. Death.
27. Trask. Seventh month, shoulder presentation, version. Recovery and subsequent delivery.
28. Trask. Similar.
29. Trask. Quoted from Duncan, term, spontaneous rupture, child and placenta extracted from abdomen. Recovery.
30. Monroe. Same.
31. Percy. Same, arm presentation. Death, bowel strangulation in uterine rent.

32. Smellie. Same.
33. Amussat. Same, sigmoid in uterus.
34. Holmstead. Term, contracted pelvis (4-para), version and perforation. Death.
35. Dubois. Same (8-para). Recovery
36. Bedford. Same. Death.
37. Collins. Primipara, spontaneous rupture, delivery by version from abdomen. Death after twenty-five days.

Not enough data are given to determine the relative predisposition of primipara and multipara nor of early or advanced age. It may be said, however, that neither opposed condition offers immunity. Of the twenty foregoing cases, twelve recovered, with subsequent successful delivery specified in two. Although allowance must be made for reluctance to report unsuccessful cases, it may be said that, at present, there is considerable argument for reposition of the prolapsed bowel under aseptic precautions, provided that the uterus closes firmly, that there is not severe hemorrhage, and that no great degree of force has been applied to the bowel. This is especially true in view of the depressed condition of the patient after uterine rupture. It is not always possible to distinguish between spontaneous and traumatic rupture, nor does the former exculpate nor the latter incriminate the accoucheur. In many cases, spontaneous rupture implies neglect of the patient during a difficult labor and, conversely, during the application of forceps, version or other obstetric operation. Abundantly indicated on general principles, for the safety of the patient, rupture of the uterus may occur independently of the operation itself or may be an inevitable result of the most careful procedure. By conceding that after a rupture during labor, it may be wise to reposit the prolapsed bowel without opening the abdomen, it is by no means intended to imply an indorsement of a "laissez faire" policy during the entire labor, such as was generally indicated before the development of modern surgical methods. On the contrary, in cases in which rupture of the uterus is imminent, Cesarean section is plainly indicated before the labor has been protracted so far, at least, as to render intrauterine manipulation difficult and dangerous, and to reduce the patient's strength to a minimum.

B. Cases at or Near Term, with Operative Interference.—

3. Coe. Multipara, version and forceps. Immediate reposition, next day resection of 122 cm. of gangrenous bowel and extirpation of uterus. Death same day.

15. Amann. 5-para, version rupturing uterus, extirpation of uterus, suture of torn cecal attachment, temporary vesicovaginal fistula. Recovery.
16. Ullman. 6-para, suture of uterus, resection of 250 cm. of small intestine. Death after two days.
17. Boldt. Similar, details not described, abdominal section after fifty hours, ileum separated from mesentery for 14 cm. and gangrenous. Death.
38. Bedford. 3-para, delivery via abdominal incision, uterus sutured Recovery.
39. Pusch. 13-para, rachitic pelvis, labor induced three weeks before term, version ineffectual, forceps tore off fetal head, next day resection of 2 m. of small intestine. Death same day.
55. Stewart. 6-para, omentum and uterus extirpated. Recovery.
58. Girvin. 5-para. Extirpation of uterus. Death from shock.
60. Fraser. 9-para. Hysterectomy. Recovery.
63. Kolomenkin. 7-para. Total hysterectomy. Recovery.
68. Seitz. Multipara. Porro. Death, shock.
71. Andr.ws. Hysterectomy. Death, shock.
72. Pilcher. Rent stitched and drainage. Result not stated.
77. Fornari. 2-para. Supravaginal hysterectomy. Death.
79. Freund. 5-para. Abdominal section, no details. Death third day.
80. Freund. 4-para. Reposition by traction from above. Suture of rent. Death after three days, peritonitis.
82. Walcher. Hysterectomy. Drainage through vagina. Recovery
84. Stajmer. 7-para. Abdominal section, extraperitoneal amputation of uterus. Drainage by vagina and preperitoneal space. Recovery.
86. Bacher. 3-para. Porro. Death from secondary hemorrhage.
87 Dietel. Resection of 65 cm. small intestine. Suture of tear. Death shock.
89. Frank. Primipara. Suture of uterovaginal tear, from below ?). Recovery.
90. Frank. 6-para. Transverse abdominal section, decapsulation of uterus. Recovery.
91. Everke. Suture of vagina. Recovery.
92. Everke. 6-para. Suture of uterine tear from below (?). Recovery.
95. Klien. 9-para. Abdominal section, suture of uterine tear through serosa only. Recovery.

C. *Recent Cases, At or Near Term, Without Operation.*

12. Mendel. 7-para. Seven months fetus, macerated, spontaneous rupture, reposition in spite of contact with bed, iodoform gauze tampon. Recovery.
13. Peham. 2-para. Justo-minor pelvis, reposition and tampon as above. Recovery, subsequent 7-months' induced labor, rupture of uterine scar, Porro operation.

14. Toth 7-para. Spontaneous rupture and escape of fetus and placenta into abdomen, delivery by feet and umbilical cord, reposition and gauze tampon, peritonitis, abdominal abscess and hernia drainage. Recovery in three months.
56. Hargrave. 10-para. Death before operation could be done.
61. Schmidt. 2-para. Immediate reposition and packing of lower uterine segment and vagina. Recovery.
62. Woods. 1-para. Reposition. Recovery.
64. Reumer. Evisceration of woman by intoxicated physician. Death.
66. Wirtz. 8-para. Death before operation could be done.
67. Mors. Intestine reposited into vagina only, gangrene. Death.
69. Merz. 7-para. Reposition, rubber drain through tear. Death after nineteen days, peritonitis.
70. Merz. 4-para. Reposition and gauze packing. Recovery.
73. Schleisner. 5-para. Reposition. Recovery.
74. Schuchard. 3-para. Reposition, irrigation. Recovery implied.
75. Osterbind. 7-para. Reposition. Death after seven days, peritonitis.
76. J. D. Thomas. 9-para. Death from shock, after eight hours.
78. Freund. 9-para. Reposition and iodoform packing. Death after three days, peritonitis.
81. Rieinger. 2-para. Omentum reposited, iodoform gauze packing. Recovery.
83. Cook. 4-para. Reposition and iodoform gauze packing. Death from shock after eight hours.
85. Schaffer. Reposition. Recovery.
86. Klien. 7-para. Reposition, iodoform gauze packing. Recovery with rectovaginal fistula.
93. Roberts. 10-para. Reposition of omentum and intestine, gauze packing. Recovery.
94. Hochstetter. 29 cm. intestine separated from mesentery. Death no details.
96. Burger. 4-para. Reposition. Ergotin. Recovery.

It is obviously difficult to outline any given treatment in such cases and it should be remembered that the reporters, whether they operated or not, were usually not the original attendants, and that they were often summoned late. There is an obvious general indication, especially on account of the liability of a uterine scar to rupture in a subsequent delivery, to prevent conception after such cases, and in many instances this is tantamount to stating that the uterus should be extirpated, with or without the adnexa, according to circumstances. In many instances, however, conditions analogous to those encountered in other abdominal lesions, render an interval operation preferable to an early operation in collapse, or to a delayed primary operation. Even after abdominal section, ideal operations are occasionally impossible. Aside from the obvious indication

to extirpate the uterus, it is usually necessary to suture the rent, though, owing to the contraction of its fibers, there is seldom much hemorrhage from this source and the indication for suture is not so absolute as theoretically appears.

According to the degree of laceration of the intestine, minor repairs, resection, anastomosis, either end-to-end or by means of establishing patency around a more or less typically resected cecum, establishment of an artificial anus, temporary or permanent, must be practised. Even when large mesenteric vessels are divided, there may be surprisingly little hemorrhage, or a copious hemorrhage may cease spontaneously, as in the writer's case. The peritoneal toilet must be made in accordance with existing conditions. Even when there has been considerable hemorrhage or escape of fecal contents, flushing is liable to spread the infection and careful sponging a id drainage may be preferable. Open treatment will at times be indicated. Unless there has been gross carelessness and continued mauling of the intestine, it will rarely if ever happen that enough intestine will be involved to interfere with its subsequent function. Indeed, unless an attendant has been not merely careless but grossly ignorant, or has been disturbed into a state of irresponsibility, he can scarcely persist in drawing down and mangling an amount of intestine that cannot be safely sacrificed. Secondary operations for adhesions, fistula, hernia, abscesses, etc., may be indicated, especially when the primary abdominal section has been performed under adverse circumstances.

It is with some hesitation that statistical comparison is made between simple reposition and abdominal section; first, because it is not possible to determine absolutely as to the condition of the intestine, amount of infection, etc., in the abdomen and the retractibility of the uterus; and, second, because if this could be done, the cases to which simple reposition is appropriate would naturally have a better prognosis. However, of the 26 operative cases (three or four sutured through the vagina), 13 died, 12 recovered and the result of one was not stated. Of the 23 cases of reposition, 10 died and 13 recovered.

In the group of operative cases, there are 10 in which the intestine was, explicitly or implicitly, uninjured, but in which the abdomen was opened. Seven of these recovered. Of the non-operative cases, one, of nearly total evisceration, was obviously fatal: in one, the intestine was merely poked back into the vagina, while two others were hopeless without abdominal sec-

tion, and died while preparations were being made for it. This leaves 19 cases with 13 recoveries, treated by reposition, the result being almost exactly equal to that after abdominal section. Three of the abdominal sections were required because reposition could not be effected from below; and, in one of these, badly inflamed intestine was left *in situ*, with doubtful propriety, death resulting. In three or four operative cases, suture was done from below, after reposition of the bowel, all recovering.

D. Cases Due to Curetment or Similar Operations Following Miscarriage, or to Gross Lesions in Inducing Abortion.

No Efficient Treatment.	*Reposition.*	*Operation. Through Vagina.*	*Through Abdomen.*
			4. Noble. (Three ops.) Recovery.
			5. Alberti. Recovery.
		6. Veit. Death. Sepsis.	
			7. Gusserow. Death, pulm. embolism.
			8. Orthmann. Recovery.
			9. Olshausen. Death, sepsis.
10. Martin. Death. (Patient moribund.)			
			11. Van Riper. Recovery.
			18. Ullmann. Recovery.
			40. Wilson. Death, fatty degeneration.
	41. Jarman. Recovery		
	42. Jarman. Recovery.		
	43. Dudley. Recovery.		
			44. Hessert. Recovery.
45. Hardie. No details.			
			46. Boblanck. Recovery.
			47 Ochsner. Recovery.
48. Andrews. Death in an hour.			
			49. Mann. Recovery.
			50. Mann (quoted). Death, sepsis.
51. Mann (quoted). Death.			
			52. Van de Warker. Death, collapse.
			53. Krusen. Recovery.
			54. Hoffman. Recovery.
			59. Fairchild. Death.

The cases under the first subdivision should, of course, have been subjected to immediate operation as affording the only

chance of recovery. It should be stated, however, that in so far as the reporters or consultants were concerned, there seems to have been ample cause for discouragement.

In cases which have been kept aseptic and in which the bowel has prolapsed through an opening made by a blunt instrument, as in criminal abortions or in which the operator has accidentally pulled down the bowel with the finger or by a blunt instrument, and when the bowel can reasonably be inferred or can be demonstrated to be intact, reposition alone may be justified. Still, notwithstanding the favorable outcome in the three cases reported, the uncertainties are usually so great as to contraindicate this procedure, except in cases at or near term.

Without reference to the general discussion regarding the advisability of the vaginal or abdominal route in surgery, cases of this nature require such careful inspection and the possibilities of inaccessible lesions are so great that the abdominal incision should almost invariably be preferred. Even cases seen late, with a fecal fistula, and apparently involving only the rectum, are not an exception. As shown in the fuller report of one of the cases at term, the enema test to determine the height of the lesion in the bowel is not reliable.

The majority of cases reported show that the general consensus of opinion is in favor of a careful scrutiny of the abdominal contents. Most of the abdominal sections resulted in resection, for the reason that most of the lesions were due to involvement of the bowel in curetting the uterus. In a few of these cases, however, the bowel had, fortunately, escaped serious injury. On the other hand, in others the laceration was extreme. The physician who thought that he was simply eviscerating a three-months' fetus, instead of the mother; the consultant who insisted that the intestine was the umbilical cord; the several instances in which delivery of the intestine was persisted in, even after enough had come down to establish its identity; and the case in which, after pulling down 183 cm. of bowel, it was deliberately amputated, illustrate the extremes to which gross ignorance or desperation may lead. In case 64 there was almost complete evisceration, but the physician was intoxicated.

Van de Warker and others emphasize the danger of curetting the uterus. Yet, with all possible allowance for the concealment of cases, the number in which the intestine is brought down through the opening or drops into the uterus, is exceed-

ingly small in comparison with the number of cases in which abortions are induced or are radically treated by physicians. The diminution of mortality by the policy of thorough evacuation of the uterus after induced abortion is great, the danger of lacerating the intestine very small. Yet, it must not be forgotten that the uterus after an abortion, especially when septic inflammation has already set in, is liable to be very fragile and that apparently careful exploration and instrumental removal of secundines, may cause perforation. Granting that the intestine prolapses through a rent, its further withdrawal or even its laceration, is almost inevitable and it is scarcely conceivable that any method of inspection, palpation, direct or instrumental, or other diagnostic means can determine this point or that any delicacy of manipulation of an instrument, efficient to clear the uterus of débris but insufficient to lacerate the bowel, or at least to jeopardize its connections, can be attained. This point is important, both from the medico-legal, the bibliographic and the practical standpoint.

Involvement of the intestine in instrumental abortion obviously renders the prognosis grave and predisposes to such catastrophies as lead to the indictment of the abortionist. In justifiable abortion, which should never be performed without council, unless in peculiarly isolated communities, the proper choice of instruments and the proper manipulations can scarcely result in uterine perforation. Granting that an abortion has begun through previous criminal instrumentality by the patient or otherwise, the weight of authority is that the regular practitioner, now assuming charge of the case, should thoroughly evacuate the uterus, dilating and curetting if necessary. While reasonable care and skill are legally required and while the individual practitioner should set his own standard at a maximum, witnesses called by the court should clearly state the prevailing opinion of the profession to be in favor of instrumental emptying of the uterus, should emphasize the fact that, in the long run, the danger of sepsis and of subsequent inflammatory and neoplastic lesions of the uterus from neglect of this treatment, far exceeds that from the extremely rare accident of uterine puncture, with or without intestinal prolapse, should explain that the alteration of size and texture of the uterus during an abortion is such that penetration of its wall may, occasionally, occur even with the most expert attendance and that, if the uterine wall is once perforated, no mediate tactile

skill could detect the difference between intestine and secundines until considerable damage may have been done. Uterine rupture at or near term is also occasionally inevitable, and the fact that it occurs during endeavors to expedite labor rather than spontaneously, is by no means to the discredit of the accoucheur. If anything, the accoucher should be blamed if the rupture occurs during a prolonged and difficult labor without instrumental or manual assistance. It is a matter for surprise that intestinal prolapse does not occur with greater frequency in uterine rupture, during labor. As a matter of fact it occurs only in about three per cent. of cases of rupture.

It is important to impress upon the profession and courts of law that the mere fact that intestine is brought down into the genital canal during labor, or after abortion, does not justify the indictment, much less the punishment of the attendant. In one of the early cases reported, the reporter seems to have been more concerned in securing the conviction of the attendant than in rendering prompt radical attention that might have saved life. The details, as published, leave some doubt as to the responsibility, at least in a criminal sense, of the convicted, first attendant but none at all that the reporter failed to give the patient whatever chance of life remained.

There are many deplorable, but, fortunately, rare accidents that may occur in medical practice, including the one under discussion. The profession should be on their guard against them, but should be assured of legal immunity and professional sympathy when they do occur in the practice of careful and conscientious men. Without such assurance there will inevitably result attempted concealment of the occurrence, lack of skilled council, bungling attempts at radical treatment by those unprepared to render it or totally inefficient palliation, which here is literally an attempt to cover the condition with the mantle of obscurity. On the other hand, a fair understanding of the subject will obviate the terrible and hopeless mutilations that have occurred, will lead to prompt intervention to meet the conditions, so that the mortality need not exceed 50 per cent. and will probably be less than 10 per cent. Indeed, aside from immediate hemorrhage, previous depletion of strength, as in prolonged labor, and occasional implantation of septic germs in the peritoneum, the mortality of promptly and appropriately treated cases should be reduced to the one or two per cent., practically inevitable for major operations.

Undoubtedly, cases of this nature, occur much more frequently than the present bibliography shows. It is highly desirable that all cases should be promptly and fully reported, with statement of age and general condition, number of previous pregnancies and abortions, condition of the pelvis, course of previous confinements and pregnancies, apparent etiology and extent of the uterine or vaginal rupture, time and details of the operation or other method of treatment, and result both as to immediate recovery and subsequent events.

Including the author's case, a very thorough search of the literature reveals only ninety-seven cases in which the intestine or omentum or both, have engaged in the uterus and vagina through ruptured or instrumental openings. Sixty-nine of these cases (summarized under A. B. & C.) were incidental to rupture during labor, in most cases at term, in a few a month or two premature. In all but three of these the uterus itself was ruptured, the exceptions being cases 67, 79 and 91, in which the vagina was involved. The vagina was torn along with the uterus in a few others.

Twenty-five cases of uterine rupture occurred in connection with abortions, in a few due to instrumental abortion, in most, to subsequent dilatation or clearing out of the uterus. In many considerable doubt exists as to the time of the lesion.

Case 57 was one of rupture of the vagina due to muscular strain, quite independently of pregnancy.

The only case closely analogous to the author's is 65, in which curetment was practised thirty days after delivery for a mass which, in the light of recent reports, may be considered as possibly syncytial. In the author's case, the curetment was practised five months after delivery at term, the symptoms of endometritis having preceded the pregnancy.

R. Klien of Dresden (*Arch. für Gyn.*, Vol. 62, 1901), collected 367 cases of uterine rupture in the literature of the last twenty years and added 14 cases, a total of 381. Among these were only 9 complicated by prolapse of intestine, less than 2.4 per cent. or a ratio of about 1.42. In 70 cases of rupture in which no operative treatment was undertaken, the mortality was 31 from hemorrhage, 18 from sepsis; total mortality 49 or about 70 per cent. Curiously enough in the series discussed under B. & C., the recoveries from uterine rupture during labor, complicated by intestinal prolapse, whether treated by abdominal section

or, in appropriate cases, by simple reposition, amounted to almost exactly 70 per cent.

TABULAR REVIEW OF CASES IN LITERATURE.

1. Baudeloque. Quoted by Wm. Campbell.	No details. Died.
2. M'Reever. *Lancet*, Vol. 1, 1828.	Term. Spontaneous rupture of uterus, 120 cm. intestine sloughed off on sixth day, fecal fistula closing spontaneously after two years, conception one and one-half years later, normal labor. Recovered.
3. H. D. Coe. *Am. Jour. Obs.*, Vol. 24, 1901.	Term, multipara. Previous labor eighteen months before, child weighing 14½ pounds by forceps. Present labor, version in first stage and forceps to head. After twenty minutes, attempt at manual extraction of placenta, 90 cm. intestine followed hand. Reposition, removal of placenta, gauze tampon. Next day, extirpation of uterus, 120 cm. gangrenous bowel clamped and pelvis and vagina packed. Resection of bowel impossible at time. Death after 9½ hours.
4. Th. Noble. *Ind. Med. Jour.*, Vo. 21, 1903.	Abortion, 4-inch fetus. Dilatation with instruments and fingers and removal of fetus and decidua. Three days later, fecal fistula. First operation, breaking up adhesions and mopping out pus from Douglas's cul-de-sac. Second operation, three weeks later, abandoned on account of collapse. Third operation, three weeks later, resection of matted intestine, anastomosis into rectum over rubber tube, removed after four days. Temporary fecal leakage at suture line. Ultimate recovery.
5. Alberti. Oberstabsartzt, Potsdam, 1894.	Probably early, septic abortion. Five previous labors. Polypus forceps brought away tissue supposed to be retained fetus or decidua. Abdominal section three hours later revealed 17 inches of incarcerated (small?) intestine. Resection, recovery.
6. Veit. Discussion of No. 5.	Details not given. Retention of placenta, three days. Forceps brought down coil of (small?) intestine. Reposition through vagina unsuccessful. Opening of Douglas's cul-de-sac, reposition of bowel, extirpation of uterus, per vaginam. Death from septic peritonitis.

7. Gusserow. Discussion of No. 5.	Similar to Veit's case but only omentum prolapsed. Similar operation, except by laparotomy. Death on twenty-fifth day from pulmonary embolism.
8 Orthmann. Discussion of No. 85.	Abortion, third month. Curettage. Removal of intestine by forceps. Disinfection and reposition. Immediate abdominal section. Intestine torn from mesentery, 6 or 7 cm. Resection of intestine, uterus and enlarged and adherent tubes and ovaries. Recovery.
9. Olshausen. Discussion of No. 5.	Similar to No. 8. Resection. Death from acute sepsis. Necropsy showed that intestinal sutures were perfect.
10. A. Martin. Discussion of No. 5.	Abortion. Operator removed 75 cm. of intestine by forceps after curettage. Stripped from mesentery, under notion that intestine was umbilical cord. Martin found woman in collapse, replaced intestine. Death.
11. Van Riper. C. S., *Med. News*, Vol. 69. 1896.	Multipara, last labor one year previously. Uterine hemorrhage, diagnosed as polypoid endometritis. Goodell's dilator used prior to intended curettage. Sound passed six inches. Forceps grasped what was supposed to be membranes but proved to be intestine. Van Riper called. Rent in uterus enlarged to release intestine. Uterus and adnexa removed. 68 cm. of jejunum and omentum involved, 40 cm. minced by forceps. Resection, recovery.
12. F. Mendel. *Deutsch. Med. Woch.*, Vol. 28, 1902.	7-para. Seven months, macerated fetus. Spontaneous rupture of uterus. Reposition of intestine, in spite of contact with bed. Iodoform gauze tampon. Recovery.
13. Heinrich Peham. *Centralb. für Gyn.*, Vol. 26, 1902.	2-para. Justo-minor pelvis. First labor normal. Spontaneous rupture at term. Uterus filled with intestine. Reposition and uterus packed with iodoform gauze, pushed through into peritoneum. Recovery. Subsequent premature labor at seventh month, rupture of scar, Porro operation.
14. Toth. Same. Vol. 27, 1903.	8-para. Aged 43, spontaneous rupture and escape of fetus and placenta into abdomen. Delivery by feet and umbilical cord. Reposition of intestine and gauze tampon. Peritonitis, abdominal abscess and hernia. Drainage. Recovery in three months.
15. J. A. Amann, Jr. *Munch. Med. Woch.*, Vol. 49, 1902.	5-para. Aged 30. Cross-birth, version, rupture uterus. Cecum torn loose from attachment, also bladder from uterus. Extirpation of uterus, suture of intestinal at-

		tachment. Normal salt flushing. Temporary vesicovaginal fistula. Recovery.
16.	Emerich Ullmann. *Wiener Klin. Woch.*, Vol. 16, 1903.	6-para. Aged 36. Term. Manual emptying of uterus, curettage, intestine protruded at vulva. Abdominal section three hours later. 30 cm. of gut removed in vulva. Altogether 250 cm. of small intestine, beginning 1.5 cm. from ileocecal valve resected. Uterine tears sutured. Death two days later.
17.	Boldt. Cited by Ullmann, above.	Similar, details not given. First attendant had curetted, removed fragments of tissue and had torn a white tube in two. Laparotomy fifty hours later. Ileum separated from mesentery for 14 cm., gangrenous, almost divided at one point. Operation not described. Death.
18.	Ullmann. Same.	2-para. Aged 21. Laminaria abortion, time not stated. Curettage. Finger detected intestine. Reposition, at least into uterus. Ullmann did abdominal section fifteen hours later; 15 cm. of bowel torn from mesentery 24 cm. resected. End-to-end anastomosis. Recovery.
19.	Guthrod. *Zeit. für Geb. e Gyn.*, Vol. 47, 1902.	Abortion, two months. Bowel drawn down by forceps, reposition and tampon. Recovery. Subsequent abdominal section for adhesions.
20.	Robiquet. *Jour. de Med. et de Chir.*	2-para. Term. Aged 32. Spontaneous rupture. Forceps extraction. Small intestine and omentum protruded from vulva. Reposition interrupted by uterine contraction. Two days later, reposition of small knuckle of gut in uterus. Ultimate recovery.
21.	Radcliffe Wood. *Lond. Med. Repos.*, Vol. 15	Primipara. Aged 24. Labor at seventh month Putrid fetus expelled after three days' dry labor. Spontaneous rupture, large mass of intestine reposited. Ultimate recovery. Seven months later, vagina blocked by hard, insensible substance.
22.	John Stewart Currie. *Lond. Med. Gaz.*, Vol. 17, 1836.	3-para. Aged 28. Breech presentation. Spontaneous rupture after delivery of half of trunk. Placenta manually and incompletely removed. Intestine reposited. Recovery.
23.	Edward W. Murphy. *Dub. Jour. Med. Sci.*, Vol. 15, 1839.	7-para. Term. Spontaneous rupture. Child in abdomen, easily delivered by forceps. Reposition. Recovery claimed but patient died from other cause on eleventh day.

24. Wm. Birch. *Med. Chir. Trans.*, Vol. 13, 1825.	4-para. Aged 29. Term. Spontaneous rupture. Version and perforation of cranium. Several coils of intestine in vagina. Reposition. Recovery.
25. Robert Collins. *Dub. Med. Trans.*	6-para. Term. Spontaneous rupture. Perforator and crochet used. Same as preceding.
26. Hooper. *Lancet*, Vol. 1, 1837.	10-para. Aged 32. Term. Rupture after ergot. Placenta and intestines expelled. (Sigmoid.) Intestine replaced and fetus extracted from abdomen by blunt hook. Death in a few hours.
27. Jas. D. Trask. *Am. Jour. Med. Sci.* Cited from unknown source. Vol. 15, 1848.	Seventh month, labor following sudden hemorrhage. Shoulder presentation, version. Rupture and protrusion; intestine discovered after removal of placenta. Recovery and subsequent child.
28. Same	Aged 24. Version. Similar, sponge used to keep up intestine. Recovery.
29. Same. Quoted from Duncan's.	Term. Spontaneous rupture, early in pregnancy, child and placenta easily extracted from abdomen. Recovered.
30 A. Monroe, Sr. New Edin. Essays, Vol. 2. Quoted by Trask.	Audible rupture of belly wall after three days' labor (two cracks heard). Intestines seen. Child and placenta expelled through abdominal wound. Recovery.
31. Percy. *Observ. Acad. de Chir.*, 1783. Quoted by Trask.	6-para. Term. Arm presentation, spontaneous rupture, fetus delivered from abdomen. Symptoms of strangulated hernia. Death after one day. Viscera found gangrenous (?) at necropsy and bowel strangulated in uterine rent.
32. Smellie's Cases, Vol. 3. Quoted by Trask.	Primipara. Aged 40. Term. Spontaneous rupture. Death in ten hours. Hernia of bowel through rent found post mortem.
33. M. Amussat. *Lond. Med. Repos.*, 1820.	3-para. Term. Convulsions. Forceps tried in vain, extraction by feet. Rupture. Death. Post mortem, sigmoid found in uterus.
34. Geo. Cook Holmstead. Same, Vol. 2, 1824.	4-para. Aged 26. Term. Contracted pelvis. Version and perforation. Intestine found in uterine tear. Death.
35. Dubois. Chailly's Pract. Treat. on Midwifery, 1844.	8-para. Spontaneous rupture, delivery by version from abdomen. Reposition. Recovery.
36. Bedford. 1 bid.	Term. Rupture of uterus and death of fetus ascribed to previous attendants. Death. Intestine between thighs.

37.	Robert Collins. Pract. Treat. on Midwifery, 1835.	Primipara. Aged 25. Spontaneous rupture. Perforation. Placenta found in vagina, rent discovered, reposition and removal of coagulated blood. Death after twenty-five days. Rent nearly healed, but double psoas abscess.
38.	W. A. Bedford. *Tex. State Jour. of Med.*, 1906.	3-para. Spontaneous rupture. Term. Fetus and placenta into abdomen, and intestine prolapsed. Abdominal section. Uterus sutured. Delivery through operation wound. Recovery.
39.	Hans Pusch. *Zeit. für Medizinal-beamte*, Vol. 5, 1906.	13-para. Rachitic pelvis. Aged 42. Labor induced three weeks early. Version ineffectual. Forceps tore off fetal head. Placenta followed, with loops of small intestine, reposited with iodoform gauze. Next morning, intestine gangrenous. Abdominal section; small intestine 2 meters long torn from mesentery. Resection, death, same day.
40.	Thos. Wilson. *Lancet*, Feb. 3, 1906.	Primipara. Aged 35. Criminal (?) abortion, fourth month. Fetid placenta removed on second day, followed by large intestine. Reposition. Fecal fistula and enema returned through vagina. Plastic operation and resection two months later. Death from shock; organs fatty.
41.	Geo. W. Jarman. *Trans. Am. Gyn. Soc.*, 1905.	Aged 34. Incomplete abortion, third month, two weeks before. Wylie's dilator used and then curet, which brought down intestine. J. then called, cleaned out uterus with finger, repaired intestine, which was not completely perforated, and reposited. Recovery, complicated by mural abscess.
42.	Same.	Four-months dead fetus, supposed to be dead seven months. Dilator caused rupture in old cervical scar. Intestine and omentum prolapsed. Reposition, recovery.
43.	A. Palmer Dudley and Hanks. Discussion of No. 42.	Curetment, after abortion, perforation of uterus and escape of 20 cm. of small intestine. Reposition, recovery.
44.	Wm. Hessert. *Chicago Med. Recorder*, Vol. 27, 1905.	6-para. Aged 46. Several miscarriages. Early abortion. Curetment brought out small intestine; reposited and iodoform gauze used in vagina. H. called and did abdominal section seven hours later. Bowel slightly bruised but mesentery torn, requiring resection of 80 cm. Recovery.
45.	J. B. Harvie. Quoted by Kelly. See No. 44.	180 cm. of bowel cut off during curetment. No details.

46. Boblanck. *Gesell. für Gyn.*, Wurz.	Abortion, curetment, loop of intestine pulled out by forceps. Resection, recovery.
47. A. J. Ochsner. Discussion of same paper, pub. in *Am. Jour. Obs.* Vol. 51.	Aged 36. Criminal abortion, 235 cm. 10 inches of ileum, pulled down between thighs, replaced in vagina. O. did abdominal section resected, end-to-end anastomosis. Recovery.
48. Frank T. Andrews. Discussion of above.	Criminal abortion, intestine pulled out in attempting to clean uterus. Death within an hour.
49. M. D. Mann. *Am. Jour. Obs.*, 1895.	Abortion, intestine torn across in cleaning uterus. Abdominal section; 15 cm. of ileum near valve torn from mesentery. Resection, implantation of ileum into cecum. Recovery.
50. Same, cited from anonymous source.	Abortion, placental forceps pulled down intestine; immediate abdominal section, reposition, suture of uterus. Death from septic peritonitis.
51. Same, cited from anonymous source.	Similar case. Physician lost his head and pulled out 180 cm. of intestine, thinking it fetal (three-months fetus), and cut it off. Death without operation.
52. Ely Van de Warker. *N. Y. M. J.*, Vol. 78, 1903.	Early abortion; middle-aged woman. Small intestine and omentum pulled down during curetment; abdominal section, resection of 10 cm. Death in collapse, next day.
53. Wilmer Krusen. *Penn. Med. Jour.*, Vol. 5, 1902.	No details. Curetment pulled down omentum. Reposition. Abdominal section within two hours. Resection of involved omentum. Recovery.
54. Joseph Hoffman. *Ann. Gyn. and Ped.*, Vol. 3.	Delayed miscarriage, six weeks. Omentum brought down during curetment. Abdominal section. Recovery.
55. Francis T. Stewart. *N. Y. Med. Jour.*, Vol. 78, 1903	Term. 8-para. Aged 38. Podalic version, omentum followed placenta. Vagina packed with sterile gauze. Abdominal section after seven hours. Omentum and uterus extirpated. Recovery.
56. Edw. T. Hargrave. *N. Y. Med. Jour.*, Vol. 79, 1904.	10-para. Aged 39; negress. Term. Version. Fibroid tumor. Rupture probably preceded version. Loops of intestine prolapsed. Death before operation could be undertaken.
57. R. Rommel. *Deut. Zeit. für Chir.* Vol. 64, 1902.	6-para. Muscular strain caused rupture of posterior wall of vagina and prolapse of intestine in mass of size of man's head. Reposition, in spite of strangulation and loosening from mesentery at one point. Vaginal tampon. Death next day.

58.	John H. Girvin. *Am. Jour. Obs.*, Vol. 48, 1903.	5-para. Aged 23, negress. Shoulder presentation at term. Version. Rupture probably due to ergot. Intestines prolapsed. Prompt abdominal section. Extirpation of uterus, which was in shreds. Death from shock.
59.	D. S. Fairchild. *Annals of Gyn.*, Vol. 17. 1904. (Quoted.)	Instrumental abortion. Soft catheter lost in uterus. Forceps pulled down 45 cm. of small intestine. Operation next morning revealed catheter in abdomen and intestine partly separated from mesentery Resection. Death on table.
60.	Nutting Fraser. *Med. News*, Vol. 82, 1903.	9-para. Aged 45. Term. Version. Hand entered rent in uterus. Immediate hysterectomy. Recovery.
61.	H. Schmidt. *Monats. für Geb. und Gyn.*, Vol. 12, 1900.	2-para. Aged 25. Term. Justo-minor pelvis. Forceps unsuccessful. Craniotomy. Uterus found ruptured and intestines prolapsed. Immediate reposition, packing of lower uterine segment and vagina. Recovery.
62.	W. V. Woods. *Monats. fur Geb. und Gyn.*, Vol. 12, 1900.	1-para. Aged 25. Term. Spontaneous delivery. On seventeenth day, uterus found ruptured and containing intestine. Reposition, Recovery.
63.	N. Kolomenkin. *Idem*, Vol. 17, 1903.	7-para. Aged 40. Term. Spontaneous rupture, perforation of child. Total extirpation of uterus. Recovery.
64.	Beumer. *Monats. für Geb. und Gyn.*, Vol. 20, 1904.	Term. Transverse presentation. Attendant drunk, uterus partially torn from vagina, entire small intestine torn out, placenta missing.
65.	Dienst. Same, Vol. 20, 1904.	5-para. Aged 31. Curetment thirty days after labor. After removal of tumor from uterine cavity. Loop of small intestine pulled down. Abdominal section. Intestine not seriously affected. Repair of uterine rent. Peritonitis, gauze drainage of uterus. Recovery.
66.	Wirtz. *Monats. für Geb. und Gyn.*, Vol. 15, 1902.	8-para. Aged 43. Term. Spontaneous delivery. Retained placenta. Bowel brought down during manual extraction. Death during transportation to hospital.
67.	Mörs. Discussion of No. 66.	Term. Rupture of vagina by forceps. Intestine reposited into vagina only. Death. Intestine gangrenous.
68.	Ludwig Seitz. *Monats. für Geb. und Gyn.*, Vol. 15, 1902.	Multipara. Spontaneous rupture. Child in abdomen, placenta loose in cervix. Porro operation. Death in two and a-half hours

NOTE.—All cases after No. 55 at term, except Nos. 57, 59 and 65.

69. K. Merz. *Arch. für Gyn.*, Vol. 45, 1894. Quoting Piskacek, 1885, 1894.	7-para. Aged 36. Head presentation, juste-minor rachitic pelvis. Perforation of cranium. Spontaneous rupture, version. Prolapse of omentum. Reposition. Rubber drain through tear. Death after nineteen days, peritonitis.
70. Same, 1888.	4-para. Aged 33. Term. Oblique presentation. Rupture by midwife in attempting correction. Head in abdomen. Version and extraction. Prolapse of omentum. Reposition and gauze packing. Recovery.
71. E. C. Andrews. *Lancet*, 1887.	Term. Spontaneous rupture. Forceps extraction. Pracenta retained and hand encountered it in abdomen. Ergot one hour later; intestine in vagina. Abdominal section and hysterectomy. Death soon after.
72. J. G. Pilcher. *Lancet*, Vol. 2, 1888.	Aged 25. Term. Spontaneous rupture. Head in abdomen and prolapse of omentum. Abdominal section. Rent stitched and drainage by vagina.
73. G. Schleisner. *Ugeskrift f. Laeger*, 1884.	5-para. Term. Forceps. Reposition. Recovery.
74. Schuchard. *Inaug. Dis.*, 1884.	3-para. Hydrocephalus. Placenta previa. Rupture after twenty hours' labor. Version. Perforation of cranium. Reposition, irrigation.
75. Osterbind. Dissertation, 1884.	7-para. Justo-minor pelvis. Forceps at every labor. Term. Fetus in abdomen. Perforation, cranioclasty. Reposition. Death after seven days, peritonitis.
76. J. D. Thomas. *Am. Jour. Obs.*, Vol. 15, 1882.	9-para. Aged 35. Term. Mesentery grasped by hand in attempting to remove placenta. Child and placenta delivered from abdomen through vagina. Death from shock, eight hours after.
77. Federico Fornari. *Raccog. Med.*, Vol. 15, 1882.	2-para. Aged 27. Term. Spontaneous (?) rupture, version. Reposition failed. Laparotomy, supravaginal hysterectomy. Death thirty-one yours later.
78. Herman W. Freund. *Zeit. für Geb. und* Vol. 23, 1892.	9-para. Aged 43. Term. Rachitic pelvis. Forceps. Intestine and umbilical cord found on attempting to extract placenta after an hour. Reposition and iodoform gauze packing. Death after three days, peritonitis.
79. Same.	5-para. Aged 24. Spontaneous rupture. Fetus in abdomen; abdominal section. Death sixty-six hours later. Uterus intact. vagina torn.

80. Same.	4-para. Aged 46. Contracted pelvis. Term. Version. Intestine incarcerated in uterus. Abdominal section next day. Reposition by traction from above, intestine inflamed and covered with fibrin. Sublimate to intestine and endometrium. Suture of rent. Death after three days, peritonitis.
81. Riedinger. *Prag. Med. Woch.*, Vol. 15, 1901.	2-para. Aged 31. Brow presentation. Forceps after fifty-four hours' labor. Complete rupture. Cranioclasty. Omentum reposited. Iodoform gauze. Recovery.
82. G. Walcher. *Med. Correspondenzblatt des Wurtt. Aerztliches Landesvereins*, Vol. 60, 1890.	Head presentation, hydrocephalus, spontaneous rupture. Reposition followed by Abdominal section. Hysterectomy. Drainage through vagina. Recovery.
83. Henry W. J. Cook *Lancet*, Vol. 1, 1898.	4-para. Aged 33. Rupture, version, slight prolapse of intestine, easily returned. Iodoform gauze packing. Death from shock, six hours later.
84. E. Stajmer. *Centralb. für Gyn.* Vol. 19, 1895.	7-para. Aged 37. Feet presentation, spontaneous rupture. Intestine found prolapsed in seeking placenta. Reposition and iodoform gauze. Abdominal section, extraperitoneal amputation of uterus. Drainage by vagina and preperitoneal space. Recovery.
85. Schäffer. *Therap. Monassch.*, Vol. 11, 1897.	Aged 37. Term. Forceps. Placenta, followed immediately. Reposition. recovery.
86. Bäcker. *Centralb. für Gyn.*, 1897.	3-para. Slight contracted pelvis; previous births normal. Perforation and cranioclasty. Manual extraction of placenta. Spontaneous (?) rupture. Omentum and loop of intestine prolapsed. Reposition impossible. Abdominal section three hours later. Porro. Death after seven hours, secondary hemorrhage from stump.
87. Dietel. *Centralb. für Gyn.* 1897.	Term. Perforation of uterus in removing placenta. Abdominal section; 65 cm. of small intestine torn from mesentery. Much hemorrhage. Resection. Tear in ligamentum latum sutured. Death after a few hours.
88. R. Klien. *Arch. für Gyn.*, Vol. 56, 1898.	7-para. Lumbosacral kyphotic pelvis. Spontaneous rupture, escape of fetus into abdomen, head remaining in pelvis. Forceps unsuccessful. Cranioclasty. Reposition of small intestine. Manual removal of pla-

		centa. Reprolapse and reposition. Iodoform gauze. Recovery with rectóvaginal fistula. Three unsuccessful operations on fistula.
	1. Frank. *Centralb. für Gyn.*, Vol. 56, 1898.	Primipara, flat pelvis. Aged 27. Forceps (?) delivery with much force. Child dead. Rectovaginal septum torn up to internal os. Omentum and portions of small intestine prolapsed. Reposition. Suture of uterovaginal tear and perineum. Recovery, four years later normal delivery.
90.	Same.	6-para. Aged 29. Head presentation. Forceps unsuccessful. Collapse, child in abdomen. Placenta in vagina. Small intestine and omentum prolapsed. Abdominal section, transverse incision, decapsulation of uterus (author's method). Recovery.
91.	Everke *Berlin. klin. Woch* 1890.	Aged 31. Transverse presentation with prolapse of arm. Spontaneous (?) rupture. Child in abdomen. Kyphoscoliosis. Placenta extracted from abdomen. Prolapse of three loops of intestine. Tear in rear and both sides of vaginal vault. Suture, iodoform gauze tampon of vagina. Recovery.
92.	Everke. *Monasch. für Geb. und Gyn.*, Vol. 7	6-para. Former births easy. Kyphoscoliosi splanchnoptosis. Spontaneous rupture. Child in abdomen, version. Prolapse of intestine. Reposition, suture of tear. Recovery.
93.	C. Hubert Roberts. *Lancet*, Vol. 2, 1896.	8-para. Two abortions. Aged 31. Seven spontaneous births. Hydrocephalus. Rupture. Manual removal of placenta. Reposition of omentum and intestine gauze packing. Recovery.
94.	Hochstetter. *Charite Annalen*, Berlin, 1892-3.	Uterus almost severed from vagina. Death. 29 cm. intestine separated from mesentery. Death, no details.
95.	Klien. *Arch. für Gyn.*, Vol. 62, 1901. Quoting Porak 1901.	9-para. Aged 37. Transverse presentation, spontaneous rupture, version, extraction of placenta from abdomen. Intestinal prolapse. Abdominal section after fourteen hours. Suture of uterine tears through serosa only. Recovery.
96.	Same, quoting Burger.	4-para. Former births normal. Transverse presentation with prolapse of arm. Spontaneous rupture. Version. Reposition Ergotin. Recovery, in spite of coitus on fifteenth day. Spontaneous birth nine months and six days later

DISCUSSION.

DR. EDWIN WALKER, Evansville.—I desire to place on record a case of rupture of the uterus with prolapse of the intestine. The history of it was as follows: I was invited in the evening about 11 o'clock by a physician who does a good deal of obstetric work to see a patient who had aborted at about the fourth month. The physician was called the same evening to deliver the placenta. He used an instrument known as the uterine augur, which he introduced and began to turn; before he realized it he had delivered quite a large mass, which upon examination was found to be a large portion of intestine. When I saw the woman fully a handful of intestine presented at the vulva, much of which had been torn from the mesentery. I replaced it in the vagina, put on a tight binder, had the woman taken to the hospital, opened the abdomen, and found by measurement thirty-one inches of the intestine torn away from the mesentery. I resected the intestine, used a Murphy button, but did not take any sutures in the uterus, there being little or no hemorrhage. The parts fell together so well that I think it would have complicated matters to have used sutures; at all events, the patient made a good recovery.

I once saw, also, a rupture of the uterus in which the bowel was drawn into the vagina during labor. This was four or five days after labor, the woman was moribund, and no effort was made to operate. Death, however, was clearly due to the prolapse of the intestine, which was allowed to remain in the uterus without interference. Dr. Charles P. Noble, of Philadelphia, told me afterward that he had had a similar experience to my first case, in which he removed thirty-six inches of the bowel.

Dr. Merrill B. Ricketts, of Cincinnati, told me that he had collected in that city two other cases in which similar accidents occurred, both of them with the augur.

In another case I punctured the uterus during curetment. The patient was a young woman who was suffering from endometritis. In this instance the uterus was rather sharply flexed anteriorly, and I am at a loss to understand how the perforation happened. I used the dilator as usual—the Sims dilator first, and then the curet, which went in very easily, and following it some of the omentum came right down to the forceps. I employed a Bozeman forceps in replacing it, and the patient did not have any further trouble.

DR. RUFUS B. HALL, Cincinnati.—I wish to compliment the author of this paper on the report of a very interesting case. He displayed good judgment and great skill in curing the patient. It is an interesting and valuable paper, also, from a statistical standpoint. I believe perforation of the uterus is more frequent than

most of us are willing to admit, especially in produced abortion. I do not believe we have prolapse of the intestine often in cases of perforation of the uterus. I had an experience in one season in my service at the Presbyterian Hospital a few years ago, that impressed upon my mind the fact that these cases often run in groups, and that, in produced abortions, uteri are perforated more frequently than is supposed. Within a period of eight days I had five patients in the charity ward who had produced abortions on themselves and had perforated their uteri. These patients were suffering at various stages of infection. Pus was present, and all of them were treated by vaginal section, the pus being emptied out; three of them recovered and two died. I have seen in my service there, taking one year with another, a number of patients who came in three or four weeks after abortion had been produced by themselves or by "doctors."

I will report a case that came under my observation quite recently. The patient was a young woman, twenty-seven years of age. I saw her in consultation with Dr. Van Meter of this city June 9 at night, who himself saw her for the first time the same day. The history of her condition was that she had one child about two years old; she had never been quite well after bearing that child, and for four or five months her health had been poor. She was irregular in her menstruation and had lost flesh. She was a frail little woman, and she conceived the idea that she was pregnant. She went to a doctor to have an abortion produced, naming the doctor. He introduced what was described as a uterine sound, which caused some distress. There was little or no bleeding, however, and in three or four days he repeated the operation, at which time she said it hurt her very much, and for which she took whisky and medicine to relieve the pain before she could leave his office. She then went home, the doctor visited her at her house, and two or three times at intervals of a week he attempted to produce an abortion; each time after his work she had a chill and high temperature. She remained in bed after his first visit to the house. Her last visit to the doctor was about the last day of March. Another doctor was called in consultation a month or so before my visit, who said she had a tumor in the abdomen larger than a man's head, and did not believe she was pregnant.

This last-named physician was a thoroughly good practitioner, and one who would not produce a criminal abortion. He was called into the case again the day preceding my visit, when he said the tumor had greatly increased in size, and expressed the opinion that the woman should be operated immediately. Both of these physicians were discharged. Dr. Van Meter was then called to see the patient, and he invited me to consult with him. Her pulse then was 140 to 160; temperature 102-103°. She was greatly emaciated, and her abdomen was larger than it would be at full term of gestation. There was fluctuation. It looked as though she had an enormous ovarian cyst, but considering the

history one could not accept that conclusion. I will say that her history up to this time, as given to Dr. Van Meter and myself, could not be relied on, as the woman's mental condition was somewhat impaired. She was not pregnant at the time these attempts to produce abortion were made. She did not menstruate on account of her poor health. We advised her to go to the hospital, and the next day she was sent at 5 o'clock in the evening. The next morning, at the Bethesda Hospital, in the presence of the house doctor, I opened the abdomen in the midline and found two gallons or more of pus in the abdominal cavity. The uterus was perforated from horn to horn, the opening being filled with a segment of omentum. The only operating done inside the abdomen was the tying off this piece of omentum and closing the abdominal incision. She recovered promptly from the anesthetic and did well for twelve days, taking liquid nourishment with satisfaction.

I should have said that when I opened the abdomen I was unable at first to recognize the fundus of the uterus as such on account of inflammatory exudate. About the twelfth day she grew worse, and within twelve hours had intestinal obstruction, and I was urged to open the abdomen. I advised against any attempt to liberate the intestinal obstruction, because I could not see how one could do so under the conditions present. I said I believed she would stand a better chance to let her alone, and that I was not willing to do any more surgery inside the woman's abdomen. Up to that time she had taken liquid food exclusively. A rubber drainage tube was still in the abdomen. For five days her life was despaired of. We washed out her stomach, gave calomel, and at the end of the fifth day she passed fluids, and in twenty-four hours more the intestinal obstruction was relieved. She made a prompt recovery from that time. She menstruated for the first time normally ten days ago.

This case is interesting to me as showing what a dirty instrument will do, and what a woman can endure without fatal results.

DR. JAMES F. BALDWIN, Columbus.—If we were to go into this subject of puncture of the uterus as an experience meeting, as they did a year or two ago at a meeting of the American Gynecological Society, I am sure that almost everyone present would be able to report one or two cases, or perhaps more, from his own observation. Dr. Hall will doubtless remember a case that we saw together several years ago, at Columbus, of abscess which was fully as large as the one he has just described. The patient was the relative of a physician. We were both called in consultation. We did not know exactly what the nature of the case was. The woman had supposed herself pregnant, and some physician had punctured her uterus in trying to bring on an abortion. We decided that discretion was the better part of valor, and did not operate. The next day there was an enormous amount of pus discharged through the vagina, after which the woman promptly recovered.

If Dr. Congdon wishes to add to his statistics, I will say that we have had in Columbus two cases that I can now recall of perforation of the uterus, one in which a doctor in curetting the uterus brought out, and cut away, many feet of the intestine, which he gathered up, dropped into the privy, and said nothing. The woman, of course, died. In another case the doctor delivered a woman of a dead baby with forceps; she had a number of fibroid tumors interfering with delivery. Following the delivery of the child a quantity of intestine came into the vagina. He pushed it back and packed the vagina with cotton. I saw the woman a few hours afterward and she was in a desperate condition. She was hurriedly taken to the hospital, salt solution was given, a few whiffs of chloroform administered, and the abdomen opened rapidly, the woman being in the Trendelenburg position, so as to get as much blood as possible to the brain. I do not know how it had been done, but the uterus was practically detached, except for a little shred of tissue half an inch in diameter on one side, and the organ was clear up against the diaphragm. It had been completely torn loose, but how I have never been able to determine. The doctor himself did not know that he had more than torn the uterus, but it was thus completely detached.

I know of a number of less marked cases that could be recorded. In the report of the meeting of the American Gynecological Society, two years ago, will be found a large number of cases reported in which the uterus was perforated during curetment. I have done it twice, in each case the curetting being preliminary to an abdominal section. In one case I did a hysterectomy; in the other the uterus was not disturbed; both patients recovered. At the experience meeting of the Gynecological Society it was brought out that nearly all of these women got well whether anything was done or not.

DR. WALTER B. DORSETT, Saint Louis.—It seems to me we could go on indefinitely relating our experiences in regard to rupture of the uterus. It occurs to me the practical thing to get at is how to deal with a rupture of the uterus. The cases may be classified, perhaps, in this way. For instance, those in which we have a rupture of the uterus during labor, either in turning or by the contraction of the uterus itself, termed obstetric rupture; they are dealt with in one way, and a rupture or perforation of the uterus by a midwife or abortionist, as well as rupture of the uterus by the regular physician accidentally in the delivery of a piece of placenta or the curetment of the puerperal uterus. These latter should be dealt with in a different way, on account of the character of the trouble we have to deal with and as to the causation. I would not hesitate in any case in which I was asked to attend, where there has been perforation of the uterus by an abortionist, to make a section and clean out the pus, for the reason that the great majority of those who produce abortions are unclean, even filthy, in their methods, and there is always more or less danger

that septic material has been carried into the uterus. It has been my fortune to operate on three such cases, in all of which the abortion was induced by the same abortionist. In these I cleaned out the pus that was present and drained. I recall one case of rupture of the uterus in labor in which nothing was done. The intestine was pushed back, and the woman made a good recovery.

Obstetrical rupture of the uterus during labor generally occurs by turning or otherwise. The tear is usually in the anterior and lower portion of the uterus; whereas perforations and ruptures by abortionists occur on the posterior wall of the uterus, so that anatomically the site is different. If it is posterior, it is more apt to become septic on account of its proximity to the rectum, hence the danger of carrying in infectious material is greater. Cases in which we have obstetric rupture are not as apt to be septic. Free hemorrhage would be the only indication for an operative procedure, such as opening the abdomen, finding the site of hemorrhage, and arresting it. It may be recognized by the issue of blood from the vagina, or by the pulse. So, it seems to me, the practical side of this subject relates to the management of the cases as they come to the surgeon rather than to a recapitulation of the number of cases that have been observed or that have occurred in practice of the different members of the association.

DR. HANNAH M. GRAHAM, Indianapolis (by invitation).—I recall a case in which I accidentally perforated the uterus where there was also a laceration of the cervix. I repaired the lacerated cervix, but previous to doing so I curetted the uterus and accidentally perforated it. I diagnosticated slight prolapse of the intestines by the sense of touch. The intestines were put back into the abdominal cavity, and I felt that if the abdomen needed to be opened this could be done later. If not, I would let it alone. I gave the patient some medicine and she came out all right. This is the only case in which I have perforated the uterus, so far as I know.

DR. JOHN YOUNG BROWN, Saint Louis.—This is an exceedingly important subject. I want to congratulate Dr. Congdon on his paper and on the operative treatment he instituted in his case. In spite of the teachings of military surgeons, civil surgeons are beginning to realize the importance of penetrating wounds of the abdomen; it does not matter whether the penetration be made by a curet in curetting the uterus, or by a bullet, or stab wound, the consensus of opinion among civil surgeons is that all such wounds should be explored, and if penetration is present immediate operation should follow. It has been my good fortune to have had quite a large experience in dealing with injuries of this character, and I am firmly convinced that we have learned little or nothing from the statistics that have been presented to us by men who have had wide opportunities for observing such wounds in military practice. On the contrary, I think they have set us back quite a number of years. A review of the transactions of this Association will show an immense amount of splendid work which has been

done by the Fellows in accentuating and emphasizing the importance of early work in wounds of this character.

The splendid work of Davis, of Vance, of Barrow, and a number of others I could name, men who have written papers on this subject, has refuted nearly every one of the teachings we have received from military men.

I quite agree with Dr. Dorsett that in punctured wounds of the uterus, or in lacerations of the uterus, it is not so much the laceration itself as it is the sequence of the laceration that should be dealt with. The case in point I think received most excellent treatment; and I believe explorations of this character should invariably be made through the abdomen. It is the only way of determining the extent of the injury, and it is the only method that offers a means of repairing the associate injury done to other viscera.

I congratulate Dr. Congdon on the method he used in resecting the bowel; that is, he removed a wide section of bowel, got well back into healthy tissue, and made the anastomosis. In this connection I want to take occasion to commend the Murphy button in emergency resection work. I have had opportunity to use the button quite frequently. I have applied it extensively in gangrenous hernia work, with great satisfaction. I have never had a bad result that I could attribute to the use of the button, and I believe to-day that if an end-to-end anastomosis were to be made on myself I should prefer that the button be used.

At the Chicago meeting of this Association, three years ago, I had occasion to present a very interesting specimen of a case operated on by my assistant, Dr. Kirchner, where a double resection of the bowel was done for gunshot wounds, attended with multiple perforations. The button was placed above the Connell suture; it passed the Connell suture without difficulty. The patient died six months after operation, and in the specimen removed at autopsy it was with the greatest difficulty that we could locate the point at which the anastomosis was made with the button, while the Connell suture anastomosis showed a very distinct diaphragm.

In addition to the thorough and beautiful anastomosis that this button makes, the time in which it can be put in place is a most important factor. I have heard surgeons make the remark that they could do a suture anastomosis as quickly as they could an anastomosis with the button, but I have never seen it done. I have never seen a surgeon who could do an end-to-end anastomosis with stitches with the rapidity that the Murphy button can be inserted.

One point I wish to speak of which I deem of importance was referred to by the essayist. He alluded to these cases coming in in the midst of shock. Most of these patients are in shock, the abdomen being generally filled with blood.

It has been my custom to start the irrigation of hot saline in such conditions as soon as the abdomen is opened. I find the saline solution is rapidly absorbed, and the stimulating effects are

seen at once, the pulse responding immediately. In regard to irrigation, I am constantly employing it less and less. In cases where the peritoneal cavity has been soiled by fecal leakage and the case is gotten at early, irrigation is uniformly practised, but if peritonitis is present at the time of operation we never irrigate at the City Hospital. Where irrigation is practised, the case is drained, a drain being placed through a stab wound above the pubes, the end of the drain extending down to the vesicorectal pouch or the cul-de-sac.

DR. CONGDON in closing the discussion said:

The discussion has largely taken the form of an experience meeting, so that not much further is required of me. I wish to state, however, in reference to cases reported at previous meetings of this Association, that this paper is based on a careful search of the literature in the library of the Surgeon General of the Army, and that all the cases, with possibly a very few accidentally omitted, will be found tabulated in the bibliography which is appended to this paper, and which could not be read here on account of its length.

Dr. Dorsett did not understand my attitude in reference to the proper procedure with a ruptured uterus. Every case stands by itself, although certain rules of general applicability have been formulated. When there is little hemorrhage, when the bowel is not ruptured, and the patient is at or near term, simple reposition under aseptic conditions is probably all that is necessary. On the other hand cases due to instrumental abortion, attempted abortion, or to the clearing out of the uterus after abortion, should all be treated by abdominal section unless the circumstances are unusual.

The president misunderstood one detail in my own case and paid me an undeserved compliment for not irrigating the abdominal cavity. I did irrigate in this case, although my rule is to the contrary. Shock in my experience in such cases means hemorrhage. When cases of ectopic pregnancy with severe hemorrhage are placed on the table practically pulseless, one is surprised to see the improvement in the pulse within a few minutes after they are placed in bed. On examining these cases every few hours thereafter the pulse will be found to become progressively slower, stronger, and fuller.

The Murphy button is one of the most valuable adjuncts that we possess in intestinal surgery. I believe that I lost the first six or seven cases of intestinal resection because I did not know how to use the button. Since discovering the trouble, I cannot recall a single case that has terminated fatally. At the time of placing the button you have all noticed that the mucosa projected above the serosa. If, without further treatment, the two ends of the button are pushed together, the mucosa will intervene. Union cannot be secured by the apposition of mucosa to mucosa, but only by that of serosa to serosa. Proper coaptation can be secured by trimming off the projecting mucosa. I thank you all for your courteous discussion of my paper.

THE RECTUM IN ITS RELATION TO DISEASES OF WOMEN.

BY

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THE experienced gynecologist is conscious of the existence of an important relation between the rectum and the female genitalia, both in health and in disease. In contrast with this stands the fact that the current literature and textbooks on gynecology are remarkably deficient in this regard; and it may be assumed that there is a corresponding deficiency in the teaching of students. These thoughts are basic to the following remarks. The writer offers nothing new, but hopes that, if his views are concurred in, the discussion of this matter will lead to its correction.

The sparsity of literature on this subject and the inadequate reference to it in textbooks on gynecology is too obvious to require substantiation. A superficial consideration of the subject, touching a point here and there, will meet the limited scope of this paper and serve to introduce the subject.

There exists a clear anatomic and physiologic relationship between the rectum and the female genitalia by which a variable influence of the function of the one is exercised over the other. In susceptible individuals there often arise disturbances for this reason, closely bordering on the pathologic. The contingent excitation of the rectum during menstruation may result in looseness or costiveness of the bowel sufficient to require attention. Remedies ordinarily employed for the relief of constipation may be contraindicated at the catamenial period on account of their effect on menstruation.

A faulty function of either of the organs under consideration may arrest or modify that of its neighbor. Chronic constipation at times affects the quantity, frequency, or course of a menstrual flow. A case recently observed, showing exceptionally clear etiologic relations, is of unusual interest.

A young unmarried female of rarely fine development and

health, whose menstruation for years had been exceptionally normal, acquired an anal fissure while straining with a costive movement. This had existed one year when the patient complained of amenorrhea of several months' duration, attended with continuous tenderness and bloating throughout the lower abdomen. These symptoms became aggravated at the monthly period time, but there appeared at most a moderate leucorrhea. Examination showed normal genitalia crowded forward and upward by an immense fecal impaction extending from rectum to cecum. Remedies applied exclusively to the correction of the bowel function fully reestablished the menses.

A retardation of rectal function, with its sequel of membranous colitis, is the most frequent concomitant of genital disease; diarrhea is not rare. The constipation resulting from a hypersensitive left ovary deserves special mention. It produces spasticity of the rectum and retrouterine ligaments, which is the cause of the constipation. The cases often go unrecognized as to their causation. Symptomatic treatment may aggravate the disease.

The writer, in a paper entitled "The Pelvic Musculature in Disease," read before this society at its Chicago meeting in 1903, called attention to the widespread distribution of unstriped muscle fiber in the pelvis; to its important clinical bearing; and to the failure of most textbooks to mention it. Starting out from the muscular organ, the uterus, and continuous with its fibers everywhere in the pelvic subperitoneum there is found a more or less definite layer of unstriped muscle fiber, named by Savage, the pelvic platysma. In some parts the muscle fibers collect in such quantities as to constitute definite organs which, functionally, are the parallel of the voluntary striped muscles.

In the case of the retrouterine ligaments so called, the collections of these fibers were designated by Luschka the musculi retractores uteri. Other such collections occur in the round ligaments, along the base and the upper margin of the broad ligaments and in the various cystic ligaments. They are distributed around the vaginal and rectal canal in definite, heavy layers, possessed of great contractile power. In the well-developed young nullipara the presence of these contractile structures is easily recognized, and the negative evidence is found in the average multipara. The variably torn, attenuated, and atrophied bands and platysma in the multipara, often further changed by the advent of inflammatory disease, contrast strongly

with the well-defined, closely-drawn corresponding structures of the unblemished youthful female. This array of muscular tissue, including also the muscles of the pelvic floor, participates variously and distinctively in the manifestations of disease of these parts. These manifestations have distinct clinical significance. Their knowledge should be made subservient to diagnosis and treatment of pelvic disease as is done in collateral fields of surgery. Greater and finer distinctions in pelvic diagnosis, would limit the ofttimes worse than useless routine treatment of the office practitioner, and would lead to a more discriminating and apt application of the principles underlying operations. A routine operation for the gross lesion was recently witnessed at a great clinic. A woman diagnosticated as having a prolapse was operated upon by a modified Tait method. The uplifted vaginal mucosa displayed the two ledges of levator ani muscles in great development and virginal intactness.

Nothing daunted, the operator carried out his routine. Three transverse sutures boldly seized the intact bellies or plates of muscles; and when they were tied the muscles were drawn into an anterior displacement to the rectum. The further steps taken are irrelevant. It remains simply to say that a large roll of posterior vaginal wall lay above the line of the levator ani muscles. It was in evidence throughout the operation, silently but none the less clearly pleading for its diagnostic recognition. It was evident that an extensive laceration and attenuation of the muscular tissues of the vault of the vagina and rectum and the retrouterine ligaments had preceded; and that the sequential loosening of the upper rectum from its mooring to the sacrum had followed. The prolapse pertained entirely to this upper region. The operation did nothing to repair this. It sadly disarranged nature's disposition of the levator muscles. The question comes up, what will be the result?

One who rarely examines by rectum inadequately understands the importance and advantages of this procedure. Changes from the normal condition of the pelvic structures can hardly be read so satisfactorily as by rectal touch. It yields more than the vaginal touch because of the quasi-unobstructed sway it affords in all directions to the examining finger. As compared with it the relatively short, narrow and thick-walled vaginal pouch is movable to a small extent, and only against the resistance of the various muscular structures attached to it either directly or through the medium of the uterus. This

pressure more or less benumbs the tactile sense. It seems commendable to examine every new case both by vagina and rectum. This should hold true, particularly with the beginner. It has been the invariable rule of the writer for many years to examine both by vagina and rectum, and many are the instances where the rectal touch revealed the true diagnosis.

The above-mentioned instance of a hypersensitive left ovary serves well to demonstrate the activity of these muscles, especially in the young individual where the pertinent muscular structures are yet unharmed by the accidents of parturition. The vaginal touch reveals the uterus drawn downward to the left and backward. The vaginal vault posteriorly and to the left presents an unyielding, board-like hardness, in which neither the base of the broad, nor the sacrouterine ligament can be differentiated. This hardness may extend to the right side. While the finger rests in gentle contact with the structures, in some instances the fixed parts relax, showing that the rigidity is due to a spastic contraction of the musculature. Now the enlarged and tender ovary can be discerned. Sharp contact with the ovary may at once reawaken the spastic contraction. In contrast with this experience the rectal touch at once enables us to distinguish all outlines. The drawn base of the broad ligament and the retrouterine ligament stand out in bold definition. The ovary is felt and can be measured and moved about. The contracted muscle is felt to yield under the finger; or by gentle massage or traction it can be made to relax. Commonly it is possible to differentiate between a simple spastic contraction and a structural inflammatory contraction. The latter will not yield to massage or traction. By this method the beginner can be spared the error of diagnosing a pelvic inflammation with infiltration.

As a matter of fact, rectal touch is practised little; and text books commonly barely mention it, much less dilate upon it. None speak of its practical superiority over vaginal palpation. The lingering fecal odor upon the finger, which is due to a fault of technic and is entirely avoidable, deters many from utilizing this means of diagnosis. The beginner should employ the rectal touch to get his first true impressions of the pelvic organs in the body; and the expert cannot afford to dispense with it.

The variable conditions of the rectum, as found by both vaginal and rectal examination, are of great diagnostic and therapeutic interest, and should invariably be noted. The

rectum in the multipara always shows deviations from the normal, connected with the events of parturition, and the puerperium. In the sequence these deviations become accentuated. Remarkable differences are recognized which certainly have different bearings and should have varied treatment, medicinal and operative. Making due allowances for individual peculiarity, there are—namely: (*a*) displacement of the rectum owing to severed attachments or supports; (*b*) undue fixation by scar bands, inflammatory adhesions, tumors or displaced neighboring organs; (*c*) different states of dilatation or contraction, of emptiness or fulness; these are combined with atrophy, hypertrophy, or relaxation.

Under (*a*) are of particular interest cases where the bowel is no longer a straight organ, but is tortuous, at times describing a figure of S extending in its course from the upper rim of the pelvis to the anus. At times the arms of this letter reach from one side of the sacrum to the other. Under (*c*) are found the cases where atrophy or loss of tone allows feces to collect in the rectum without its ability to move them on; or where, as above described, a painful ovary excites reflex contraction of the bowels, preventing feces from passing the painful point, and where long persistence of the condition has resulted in hypertrophy and undue excitability of the rectum. Both conditions cause constipation, but they call for different treatment.

The writer is reminded of the faith in aloes which his former teacher, Dr. Thomas B. Harvey, possessed. No doubt it acts well and is truly indicated in many cases, yet it is easy to see where its employment is directly contraindicated. So, also, the folly of routine treatment of prolapse of the uterus or laceration of the perineum, by one or another method of operation, as frequently advocated, becomes freely apparent as soon as we make a more discriminating and careful investigation into the different conditions prevalent in the individual case. A careful search into the condition of the pelvic musculature must be included.

The rectal temperature in pelvic diseases has especial significance. The oral temperature in these cases is often misleading. The rectal temperature may be anywhere from one half to three degrees more than the oral temperature. The recognition of a febrile disease or its gravity may depend upon this procedure, making it obligatory to take the record at both

sites. Textbooks are singularly silent on this differential reading.

Feeding and medication by rectum cannot be overestimated. The rectum absorbs as greedily as the stomach, and when due attention is given to the proper selection of food and medicine, the rectum in times of disease may exceed the powers of the stomach. The latter always, and especially during disease, is subject to psychic moods and reflex disturbances, which impair its powers. The rectum goes practically untouched by these influences. Medication by rectum in pelvic disease has special virtues, as for instance, when sodium salicylate and saline solutions are given, which are taken up by the same lymph channels that carry the bacteria and toxins of disease. Thus the medicine exerts an immediate antitoxic and diluent effect upon the morbific materia. It also greatly stimulates peristalsis and so obviates the need of an oral administration of purgatives.

This discourse has served its purpose, if it is suggestive in recalling the possible important relations existing between the rectum and the female genitalia. Out of these relations grows the need of a special chapter in textbooks on gynecology treating of this matter.

DISCUSSION.

DR. W. A. B. SELLMAN, Baltimore.—I do not want to see this paper pass by without some discussion, because the essayist has brought up an interesting subject. I have great faith in the rectal touch. I consider it a great aid in making a diagnosis of the conditions which exist in the pelvic basin. Where there is shortening of the structures around the uterus, for example, the broad ligament, or in case of deposits or tumors, it is a most valuable aid. By abdominal touch, or by vaginal examination, we are often uncertain in regard to the position of an enlargement that is present in the pelvis. If we depend upon bimanual touch, with the finger in the vagina and the hand on the abdominal wall, it is impossible at times to differentiate and to decide exactly where this enlargement is located. By relaxing the sphincter ani, either by stretching or by the use of a 4 per cent. solution of cocaine placed on a cotton pledget and left in place five minutes, we are enabled to introduce two or three fingers into the rectum and to reach the higher structures Thus many times I have been able to decide that a cyst is located in the broad ligament, and that it is not a fibroid tumor or a cyst of the ovary.

Again, I think the condition of the circulation in the rectum,

what we call the hemorrhoidal condition or dilatation of the venous channels, has a great deal to do with the circulation in all of the organs located within the pelvis. We all know that women, as a rule, suffer from constipation more than men. It is not unusual for a patient to tell us that she has an evacuation from the bowel anywhere from six to fourteen days. This inactivity permits a venous stasis in that viscus; it interferes with the return circulation, the muscles located in the walls of the rectum lose their tone and, finally, the bowel becomes like a flabby bag. If we examine a patient, we will find that while fecal matter comes down, a certain amount of it remains in the bowel. The same thing we find in cystocele. So, also, the bladder is a bag in which some of the urine is contained after the woman evacuates the viscus; hence when she stands up there is a dribbling of urine from the sac. Very much the same condition exists in the rectum at times. A woman may have an evacuation of the bowels every day, but if she does not normally empty the bowel, it retains this condition of venous stasis in that viscus.

With the essayist, I lay great stress upon the value of rectal examination, and I think if it were carried out thoroughly, we would be able to recognize diseased conditions, especially existing in the pelvic basin, which we fail to diagnosticate by other means of examination.

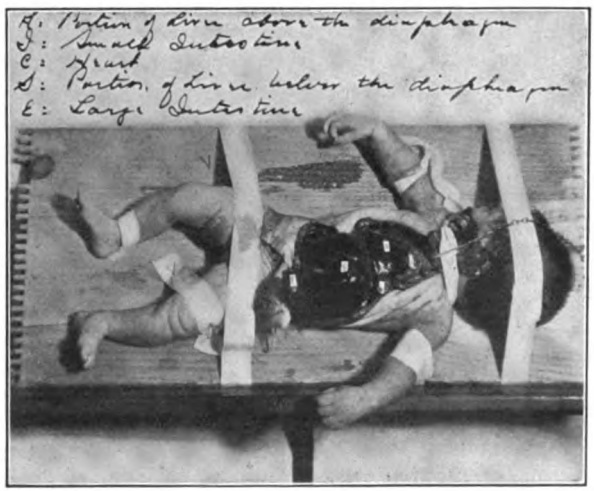
DR. CHAS. E. CONGDON, Buffalo.—This paper is very valuable and timely. We all recognize its merits for, in our everyday work, we appreciate the truth of what has been said by the essayist. During the reading of the paper and the discussion, I have been vainly trying to recall a case of pelvic trouble in which a rectal or vaginal or bimanual examination failed to afford a diagnosis. My rule in obscure abdominal cases is to put the patient into all possible postures while examining and, if not entirely convinced by palpation, a rectal examination may aid. The same general rule applies to the male as well as to the female. I have located the appendix by rectal touch, a method too often neglected. A further point is the examination of the feces, in cases of obscure abdominal pain. One may be surprised to find that there is a chronic mucous colitis which explains, in a measure, the abdominal pain from which patients so frequently suffer and from which a section does not relieve them. The author's paper spreads before us a field for thought, from which much of value can be gleaned.

DR. PANTZER (closing the discussion).—I have had my say in the paper and am unable to add to it at this time. I wish to express my grateful appreciation of the attention given it.

EXHIBITION OF SPECIMENS.

CASE OF COMPLETE ABSENCE OF LUNGS.

DR. WILLIAM M. BROWN, Rochester (by invitation).—It was not my intention to make any formal presentation of this case. I brought the specimen here at the suggestion of your secretary, Dr. Potter, largely as a matter of curiosity, and he feels that some remarks should be made in connection with its presentation. Unfortunately, I came away from home without the notes of the case. I have seen since this case occurred last spring reports of two similar cases in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.


A: Portion of liver above the diaphragm
B: Small Intestine
C: Heart
D: Portion of liver below the diaphragm
E: Large Intestine

This child was born at full term (exhibiting specimen). Its mother was brought into the hospital after having been in labor several hours, with a defective heart and broken compensation. I finished the dilatation and had my assistant deliver with forceps. I was watching the mother; she did very well; everything appeared to be perfectly normal; delivery was fairly easy, although the child was large for the pelvis. The woman was a primipara. The child weighed nine pounds and six ounces, and so far as the delivery was concerned, everything was satisfactory. There was no laceration, and the mother's circulation was improved by the administration of salt solution. But as soon as the child was delivered, it made rather frantic efforts to breathe;

it was not able to make any sound. The heart was beating all right. But the child became blue. I took the child from the nurse, while my assistant was looking after a postpartum hemorrhage, and began artificial respiration. I attempted to inflate the lungs, without success. Forty-eight minutes after delivery the child's heart was still beating. I kept hoping it would begin to breathe, but we were not able to get any air into the lungs, and finally the heart ceased to beat. The child externally was perfectly formed. There was no mucus in the child's throat or trachea. We could not find any reason why the child died. I demanded an autopsy. The family were Jews and did not care to have an autopsy made. Finally, we insisted upon it, and obtained an autopsy with the result of finding practically a complete absence of lungs.

Here is the specimen, with the absence of the posterior portion of the right half of the diaphragm. A part of the contents of the peritoneal cavity are above the diaphragm, the small intestine, and about one-third of the liver. The heart is crowded over in the position I show you. There is a small bit of lung tissue in the apex on each side, which was adequate reason why the child did not breathe. I brought the specimen with me to exhibit as a curiosity. I have here some photographs which show the condition fairly well. I will pass them around.

TWISTING OF THE FALLOPIAN TUBE WITH GANGRENE, WITHOUT IMPLICATION OF OVARY.

DR. JAMES F. W. ROSS, Toronto.—The case I would like to report is one of a condition of which I have failed as yet to find any record, and that is a twisting of the Fallopian tube with gangrene, without any implication of the ovary. A few weeks ago I was asked to go to a neighboring town, twenty miles from Toronto, to see a lady patient. She had been a trained nurse, but had married. She was taken with a violent pain in the abdomen in the middle of the night. She sent for a doctor, who came to see her, and he thought it was intestinal indigestion. Having been a trained nurse in Philadelphia, she came to the conclusion that her pain was too severe for an ordinary indigestion, and decided she wanted further advice. She telephoned me to come and see her. I found that she had rigidity of the right rectus muscle; some elevation of temperature; vomiting, and tenderness on pressure over the region of the appendix. I diagnosticated acute appendicitis. The doctor said he did not view the case in that light. I told him, however, that I was satisfied the abdomen ought to be opened, and he said he did not think it should.

The patient was brought to St. Michael's Hospital, Toronto, next day, and I opened the abdomen to the right of the rectus muscle, coming down upon the cecum, only to find the appendix normal. I looked into the pelvis and found a black mass. It proved to be a tubercular tube that had become completely twisted on

itself about one and a half times, was strangulated, but the ovary below it was healthy. The tube was black and gangrenous. The tube on the other side showed evidences of tubercular disease, so that this woman had had an attack of tubercular salpingitis affecting both tubes, and as a consequence of some sudden force one tube became twisted and strangulated. I asked her afterward, when she was recovering, about it, and the only way in which she could account for it was that she had turned the crank of her brother-in-law's automobile, after which she felt pain. The pain soon ceased, but returned at a later period. In turning the crank of an automobile one has to get down in this position (illustrating), and whether that had anything to do with it or not I do not know. I tied off the strangulated tube with catgut, left the ovary in place, closed the abdomen, and she recovered.

I showed the specimen in the pathological exhibit of the British Medical Association recently. I have had a water colored drawing made of it, and as yet I have failed to find in the literature a similar instance of gangrene of the Fallopian tube from twisting.

DR. JAMES F. BALDWIN, Columbus.—I wish to report the following case in connection with the one cited by Dr. Ross. Mrs. A., aged 43; married twenty-three years; no children; one miscarriage two years before at five months as the result of a fall. Patient was seen at 12:30 A.M., September 21, 1899, in consultation with her physician, Dr. Emerick. The evening of the 19th she missed her chair in sitting down and thus fell somewhat heavily on the floor. She laughed over the occurrence and thought nothing more about it. She thought she had had a little feeling of discomfort in her pelvis for about a week. At midnight, three hours after the accident, she was awakened by intense pain in the pelvis, which was so severe that two hours later she was seen by her physician. He found her very sick; she had been vomiting. He saw her during the day at intervals and tried to get her bowels opened by cathartics, but this failed. She vomited persistently all that day, but had not vomited two hours previous to my consultation. Examination showed pronounced tenderness at McBurney's point, her chief complaint being in that region and a little below it. The diagnosis seemed to rest between acute appendicitis and some trouble with the appendages on the right side. Her temperature was a trifle below 100°; pulse 80. At 9 A.M. the patient's temperature was 100.5°; pulse 95; abdomen much distended. She had been vomiting again all the latter part of the night, and looked much worse than when seen at midnight. There was no change in the local conditions and no movement of the bowels. An immediate operation was urged and assented to. The patient was at once removed to the hospital and the operation made at 2:30 P.M. When the patient was under the anesthetic the presence of a cystic mass back of the uterus and to the right of it seemed to indicate that the trouble was probably not of the appendix, and the abdomen was accordingly opened in the median

line. Bloody serum at once welled up out of the incision. On pushing the distended intestines out of the way, a gangrenous cyst, having a twisted pedicle, was found in the pelvis. On bringing the cyst up it was found to be an old hydrosalpinx, and was removed in the usual way without disturbing the ovary. Hydrosalpinx was present on the opposite side, which was removed at the same time, together with the appendix, which was found to be the seat of chronic inflammation, and which had been attached to the right tube. The patient made an uneventful recovery.

Examination of the specimen showed it to be about the size of a large fist, and to contain, in addition to the serum, quite a quantity of blood, which had evidently been extruded as the result of the twist.

DR. JOHN YOUNG BROWN, Saint Louis.—I have two interesting specimens which I should like to briefly present. The first is a gunshot wound of the gall-bladder. The patient, an Italian, was brought to the City Hospital an hour after having been shot through and through. The bullet entered at the lower margin of the ribs on the right side in midaxillary line and emerged on the opposite side. The abdomen was quickly opened. A bullet wound of the liver was found, from which he had bled profusely. The hemorrhage was stopped with gauze. The gall-bladder, as you see, was perforated in two places and was quickly removed. Two wounds in the stomach were found, which were repaired with silk. The patient made a nice recovery and has since returned to his home in Italy.

The next specimen was removed from a woman, who was admitted to the City Hospital suffering from a strangulated, femoral hernia. During the operation for this condition her pulse became bad. When the hernial sac was opened at each respiration blood flowed freely from the femoral ring. A diagnosis of ruptured, ectopic pregnancy was made, and I opened the abdomen, removing the specimen which I present. This specimen is only interesting from the fact that the rupture occurred during the operation for hernia. The patient made a perfect recovery.

THE TREND OF THE TIMES IN APPENDICECTOMY.

BY

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Cleveland.

AT intervals during the past centuries certain symptoms have been recorded which are now known to be characteristic of appendicitis.

Disease of the appendix was, however, first recognized less than one hundred and fifty years ago; then the subject lay dormant for another seventy-five years, when it was given a definite scientific status through the efforts of two Frenchmen. But even the accurate descriptions of Louyer-Villermay[1,2] and the well-founded theories of Mélier[3] were not utilized by their contemporaries in the profession; this for two reasons: First, because Dupuytren, the leading surgeon, too narrow to realize the importance of this great opportunity, remained an exponent of the thought of his times, which referred to the colon the origin of the right iliac inflammatory processes. Second, because the German School, in applying the name "peri-typhlitis," a term so apropos of the general belief, both encouraged and confirmed that erroneous opinion, which, indeed, has in some quarters hardly been obliterated in our own day, as has been so prominently illustrated in the history of King Edward's recent illness.

After fifty years of semi-obscurity, Krönlein[4] performed the first appendicectomy on February 14, 1884. Though in the midst of an acute attack, the abdomen was closed without drainage, and the patient died within twenty-four hours.

In 1886 Hall[5] of New York had the honor of the first successful operation ever performed for appendicitis. Two years later Boston, in the person of Reginald Fitz,[6] produced an epoch-making paper, which cleared the atmosphere of former, false notions, by defining the relationship between appendix and colon. Our best surgeons, with thought and skill no longer misdirected, were not slow to discover that while operative interference as a last resort is good, the same measures applied

earlier, and during the interval, produce far more satisfactory results.

Surgical treatment for chronic appendicitis was given a powerful stimulus by McBurney[7] in 1889 when he demonstrated the feasibility of operating without destroying the muscular continuity of the abdominal wall. Since this time McBurney's muscle-splitting incision has been the standard. In 1894 Morris[8] read a paper entitled "The inch-and-a-half incision and week-and-a-half confinement in appendicitis," which elicited a great deal of discussion both favorable and otherwise. Noble[9] of Philadelphia, stands for the overlapping of the fascia: he also advocates the larger liberty and therefore increased comfort of the patient. Within the last six months Bayard Holmes[10] has published his personal experiences under the title "The Short Narcosis, the Short Incision, the Short Stay in Bed After Ideal Operations."

The writer, who has worked along similar lines for more than thirteen years, is fully convinced that the next step in progressive surgery is the perfecting of the technic, with an eye single to the best good of the patient, even to the smallest details; mere recovery is no longer all-sufficient.

The ideal condition is health; operation approaches the ideal in proportion to its elimination of time, pain, and danger in illness. These undesirable elements may be more surely and fully eliminated than we have been accustomed to think possible, if in addition to the essentials we have heretofore considered necessary we give due attention also to certain points which have been too long neglected.

The first of these is the choice of anesthetic. The ideal anesthetic is yet to be discovered. Ether and chloroform are certainly a great advance over the methods in vogue prior to their discovery, yet even they are too frequently followed, not only by the expected discomfort, but by disastrous results. Hewitt[11] gives the mortality from chloroform as one in three thousand; ether one in fifteen thousand; while from nitrous oxide and oxygen there has been, so far as he knows, no fatality recorded. The Science Committee of the British Medical Association,[12] in an elaborate report on anesthetics, has demonstrated that 25 per cent. of the experiments with ether showed albumen in the urine afterward. Dr. Robb[13] says that 17½ per cent. of his operative cases have albuminuria. Within the past four months one of our principal hospitals has recorded three deaths

following ether narcosis; these took place a few days after operation, with complete suppression of urine. In my experience with nitrous oxide and oxygen, now extending over a period of six years, such lamentable accidents do not occur.

Another strong point in favor of gas anesthesia is the fact that, even after major operations, the patient is rarely prostrated by nausea. So slight are the after-effects that, not only examinations, but minor operations are performed in my office upon patients who, within an hour or so, take a car, or walk home without discomfort. On the other hand, ether given merely for examination, frequently requires detention in the hospital for several days.

The method of operating is of utmost importance. The incision should be just large enough to give access to the field of operation. All surgeons agree theoretically with this statement, but practically, one finds three-quarters of an inch sufficient for a favorable case, while another requires two or three inches. When the condition is more complicated the former is successful through an inch and a half incision, the latter barely satisfied with an opening from four to ten inches in length. Of course, the first surgeon requires a physical diagnosis approaching exactness; he places the incision immediately over the appendix, and is especially careful to injure the abdominal wall as little as possible.

The extent of the skin incision is of no importance, except for cosmetic effect; if the patient is fleshy this superficial cut may, of necessity, be a long one. In aseptic cases the fascial separation should be only sufficient to admit the tip of the index finger; this is crowded through the soft parts, which are easily dilated to admit the entire length of the finger.

A careful examination is made of the parts within reach; ordinarily the anterior border of the liver, lower pole of the kidney, ascending colon, ileum, and, in women, fundus and right tube and ovary can be palpated. The appendix is located, its condition noted, also the presence or absence of adhesions. If movable, the appendix is brought up to the incision by hooking around it the finger, which is then withdrawn; the wound is held open by a pair of retractors, the omentum pushed aside with one pair of forceps, with another there is brought through the opening the appendix, to be ablated by any method the operator may select. Senn [14] introduced the use of one or

two Lambert stitches to close over the former site of the appendix, thus leaving no raw surfaces for the formation of adhesions.

As soon as the head of the colon is replaced, the muscles of the abdominal wall so adjust themselves that there is no opening into the abdomen. Though probably unnecessary, it has been my habit, as an extra precautionary measure, to close the peritoneum with one stitch and secure the overlapped fascia with one more.

Dr. Crandon[15] of Boston has recently demonstrated that the same skill and method which have proven so successful in chronic cases may be also applied, though with slightly modified technic, to acute appendicitis.

Given an anesthetic with little, if any, attendant nausea, an incision so short as to close of itself, and there is no physiological reason for the recumbent posture. The writer has gradually shortened not only the incision but also the time spent, of surgical necessity, in bed; for not infrequently, whether from physical overwork, or nervous strain, patients need, and should have, a course of the rest cure.

It is the surgeon's business to do the best possible for every case, no matter how unfavorable. But the ideal operation can be performed only upon an ideal patient; one who is intelligent, obedient, hopeful and of good recuperative ability, both mental and physical; having well-developed muscle and fascia, without excess of fat, and a movable appendix with a good mesentery; one whose condition is uncomplicated by intercurrent disease, or by severe sequelæ, the result of previous attacks. Such a case will make a more complete, as well as speedier recovery, if allowed more liberty during the after-treatment than has been ordinarily deemed advisable; water and other liquids may be given earlier, and in quantities sufficient tc satisfy. While the stay in bed is usually from two days to a week, there are patients who experience great relief from a sitting posture within a few hours of the operation, this is especially true of the obese, and of persons possessing a sensitive alimentary canal. Some cannot, unassisted, evacuate either bladder or bowels in a recumbent position; one such took a step or two several times during the evening, although the operation had taken place a little after noon of the same day.

Not yet has my practice afforded a single example of hernia or any other injury, or even of discomfort traceable to liberal after-treatment. On the contrary, it has been my good fortune

to note the absence alike of adhesions and mental disturbances, but an increase of appetite, of bodily vigor, of cheeriness, and even of confidence in the surgeon, as a result of this method in convalescence.

One "ideal recovery" was back in his office at work four days after operation; another walked upstairs before the close of the third day and entertained guests on the porch a few hours later. A member of the staff of one of our principal dailies was caught in a snowstorm ten days after operation; he walked five miles to shelter without harm of any kind.

These three points, choice of anesthetic, method of operating, and liberty to the safe patient, are by no means the only questions of importance connected with the ideal operation. The patient's selection of operator; time of operation, during the interval, if possible; proper hospital environments, including operating room, and corps of assistants trained to cooperate with the surgeon in charge; these and many other considerations are of moment in every case; but attention has been given in this paper only to those points which, in my judgment, have suffered neglect, or have been the subject of discussion only to be decided unwisely.

Who are the leaders in this movement toward the ideal? A comparatively small number of physicians and surgeons, among whom may be noted our keenest thinkers and most skilful operators. And the followers? All who have experienced themselves or have observed in friends the happy results of successfully eliminating time, pain, and danger from the sick bed. A gradually increasing constituency, drawn from the better educated classes, may be heard, even now, demanding advanced surgery, that shall promote the well-being of the patient with little or no regard to the ease of the operator.

Opposition to the ideal operation is widespread but intangible, therefore the more difficult to combat. Laymen, especially those who are not abreast of the times in other respects have an indefinable feeling that any departure from the "flat-on-your-back theory" of our grandfathers is medical heresy; with such, however, one practical demonstration changes conservatism into championship. The same cannot be said concerning the majority of the surgical profession; many of whom witness a short incision, admit its happy results, then, instead of adopting the method, proceed to raise various and sundry objections.

One operator says it is easier to work through a long incision; one, that the opening should be enlarged lest the appendix be not found within reach; another that the traumatism of a small incision might result in gangrene of the abdominal wall; still another claims that a long incision will heal just as rapidly as a short one. Such criticisms are based either upon inexperience or upon lack of skill. But what answer shall be given to a prominent surgeon, the head of a large hospital, who says, "this cures our patients so quickly that they and their friends, not appreciating what has been done for them, are liable to refuse to pay the bill"?

Not a few medical members of the profession believe in the *method of operation*, but are awaiting further testimony and more indubitable proof before deciding in favor of *liberal after-treatment*, a matter which is of much the lesser importance. Such an attitude seems to me both safe and sane. But history protests against our paralleling the mistakes of Dupuytren, who rested upon past attainments rather than seize the opportunities of the future.

Strong men of independent thought have set out simultaneously, and without collaboration, to blaze the trail of ideal surgery, while an intelligent and progressive public follows close upon the heels of such frontiersmen. These are unmistakable symptoms of the trend of the times.

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POINTS COMMONLY CONTESTED IN THE DIAGNOSIS AND TREATMENT OF APPENDICITIS.

BY

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SEVENTEEN years ago I presented a paper entitled, "Surgical Conception of Peritonitis." Many of you discussed it strongly and fully. That grand old past-master in surgery, Dr. Vander Veer, opened the discussion with the remark, "to one brought up in the school of opium treatment, as those of us were who have practised in the immediate vicinity of New York and that part of the East where the teachings of Alonzo Clark prevailed, it seems as though we were living in the land of dreams, when we are told to give opium, opium, opium." We have in our society a surgeon very renowned in peace, as he was steadfast in his duty toward the wounded during his long military service in the Civil War. He says now that he would like to live again through the misery of all his sad experience, just to save his cases of abdominal gunshot wounds. The surgical conception of the etiology, pathology, and treatment of all varieties of traumatism and peritonitis has led to the abandonment, not only of the dicta of the past, but to its utter and entire demolishment. Good and active practitioners, fine pathologists, excellent diagnosticians, bring us the simple cases and tell us, "one or two days or weeks ago, I had a man badly shot, another badly stabbed, six or more perforations of important viscera. I opened promptly, repaired the lesions, tied the offending vessels, and made a toilet." Such stories convince us that our work has not been done in vain.

We rarely hear an allusion to idiopathic peritonitis; no reference is made to opium or the sheet-anchor treatment, and but little is said about calomel and salts. I am satisfied that most operators familiar with septic and infectious or perforative lesions of viscera, are convinced that calomel and salts are harmful and worthless. As yet I have learned of nothing that stays the progress of gangrene of the appendix,

or in the least lessens the accumulation and dissemination of its pathological products. We know that some patients toil for their loaves and fishes with a gangrenous appendix in the iliac fossæ or pelvic basins; children go and remain in school with a gangrenous appendix and a puddle of foul-smelling fluid in the pelvic basin, extending up to the right kidney.

I have had a number of patients travel hundreds of miles, two of them across this continent in the last month, with free pathological products in the peritoneal cavity and pelvic basin. Only a few weeks ago, one from St. Louis wandered with greatly impaired locomotion to Atlantic City, N. J., with a huge puddle of pus filling his pelvis, and lifting all viscera quite to the umbilicus. A modern toilet and drainage was enough to save him. If these subjects are not kept too long, or until the processes of deep decomposition are too advanced, we can save them, and use chloroform for the anesthetic. I had the honor and pleasure of assisting Dr. Thomas G. Morton of Philadelphia, in doing the first premeditated operation for appendicitis in Philadelphia. He and his pupils did the operation often; recognized the precise nature of the disease, and boiled the symptoms down to four or five cardinal points to work by. I do not wholly agree with Dr. Murphy, when he says, "here is the place to say that of the voluminous literature on appendicitis, practically 99 per cent. can be entirely ignored, leaving only the epoch-making articles of Krönlein, Kraft, Fitz, Bull, Sands, McBurney, Roux, Sonnenburg, and a few others." I appreciate choice literature, but I am sure you will sustain me when I insist that the reports and brief, but numerous, discussions of the active surgeons had more to do with establishing the new pathology, diagnosis, and treatment, than the library epoch-making articles referred to. Let me name a few of the leaders: Morton, Hunter McGuire, Lewis McMurtry, the Davis brothers, Robert Morris and J. B. Murphy. While Murphy was not an early worker, he has never laid down the hammer, and has done more to refine and perfect both the surgery and literature than the whole group of authors to whom he so generously gives the glory. He forgets how Morton, Davis, Morris, McMurtry, and members of this society traveled over this great country reeducating the profession. Some of the authors to whom he refers we have never seen in a society meeting room. Murphy very justly belongs to the group of whom he says, "Americans should be given the whole credit of forcing

the surgical practice to its present high standard as a life-saving procedure." Many are much interested in the function of the appendix; I know but few good surgeons who are especially concerned about its function. I am satisfied it is a rudimentary organ and an offending anatomical cesspool and culture medium, a storehouse for venomous germs or their recolonization. I am sorry that many, in their sublime ignorance of this important subject, do not stop inquiring about its office, and think more about the pathology, diagnosis, and early treatment.

Like gunshot and stab wounds of the abdomen, we have not fixed in the minds of the profession or the people that appendicitis is wholly a surgical affliction; that therapeutics, except that coming under the head of good nursing, is entirely useless and strongly favors delay and procrastination, primarily giving a high mortality. "While dealing with pus and gangrene, gangrene and pus daily, one naturally seeks a solution for the appalling pathological conditions that should never occur, except out of the reach of intelligent clinicians. The unfavorable conditions referred to are more common now than ever before in the history of this subject, and but few appendicitis operations are done early." The delays have been put in various forms; olive oil as a remedy we disposed of quickly, like sulphuretted hydrogen as a specific for phthisis; stupes and poultices are about forgotten; the rest and starvation treatment is a part of the old opium treatment; cold storage and lavage are not new or true, but revived by authors of great prominence, and have had a large spreading influence, difficult to combat. The diagnosis rarely puzzles an intelligent physician; but few errors are made. The results of early treatment are pleasing to all concerned. The delayed operations give a strictly culpable mortality, the fatal cases having been under treatment four to nine days after a precise diagnosis. Unfortunately, a good many surgeons do not recognize approaching dissolution or urge the early surgery that saves. If one succeeds in what seems hopeless on the operating table, he is emboldened to try it again and again.

I find in the reports of some good hospitals that patients suffering from appendicitis remain in the medical wards until dead, no surgical effort being made to save them. This simply means that the pure clinician does not yield the point that it is a surgical affection. It also means that the clinician has not a precise knowledge of pathology, that he has not served his

apprenticeship as a resident or an aid to a surgeon. When the operations are complete, the recoveries pleasing, reopenings or secondary operations for a variety of complications, ileus, etc., are not necessary. One prominent operator reports twenty-four cases of ileus in his work. This simply means that his work is defective. Multiple incisions and drains in both the pelvic and abdominal cavities are insults, both to surgery and to the peritoneum. Most operators have succeeded in saving their desperate cases by a small or a generous incision; the multiple incision and drain only favor an additional point for complications. Reopening one's own patients and those of others for early and late postoperative sequelæ is an important schooling for the operator. I object to all imperfect and superficial methods. With a good working knowledge of pathology, we learn when delayed, that the appendix is deep in the pelvis and loins, and that the peritoneal cavity is infected throughout; that the toilet and drainage must be quite general to save the patients. Acute local infections are easily stayed by limited surgery. Recent authors give a chapter entitled, "Pelvic Appendiceal Abscess." The enormous percentage of angry gangrenous and perforative forms of appendicitis we find in the pelvic basin or over the ileopectineal line is simply surprising.

Kelly gives important statistics of "Pelvic Appendiceal Abscess." In 22 cases of abscess originating in the appendix, 7 were found situated in the pelvis. Another found 40 which were pelvic, out of 132 abscesses starting in the appendix, and of these there were 27 in which the appendix itself was located in the pelvis. In 21 cases out of the 40, the pus was situated in the pelvis alone, while in the remaining 19, the pelvic abscess was associated with an extension to other regions. Out of the 21 cases, in which the abscess was confined to the pelvis, there were 7 in which it was concealed in the true pelvis, and not perceptible to abdominal examination, but in 14 cases it could be felt through the abdominal walls. In the 19 cases of pelvic abscess with extension, the right iliac fossa was the seat of the second abscess 14 times, and in every instance the iliac abscess was isolated from the pelvis. In three cases the extension of suppuration was into the left iliac fossa. Out of 24 pelvic cases collected by another author, the suppurative process was confined to the pelvis in 11 cases, in 7 there was an avenue of communication between the iliac and the pelvic abscesses; in 4 the pelvic suppuration was secondary to iliac ab-

scess; and in 2 there was a pelvic abscess with bilateral iliac diverticula. Sometimes there are two abscesses, one surrounding the appendix in the iliac fossa, and another filling the pelvis; they may be entirely distinct from each other, or they may communicate more or less freely over the train of the pelvis under the adherent coils of the intestines. I quote this to demonstrate that walled-off theories are pathologically rare, and that the surgeons are commonly the unfortunate victims of their faith. I have known a good number of surgeons to wholly overlook pelvic puriform accumulations while finishing a groin operation, to be reopened one, two, or three days later, because the patient was doing badly.

Waiting and watching should not be taught or practised, either in private or public, under skilled or unskilled observation. We know that perforations occur under our eyes, and that good clinicians watch and endeavor to limit spreading peritonitis and infection, with quick disastrous results. Most good surgeons admit that they are distressed and unhappy while watching and waiting for an appendicitis that has not been operated upon. A perforation, a spreading infection, does thrice more harm, and kills thrice as many patients as an inexperienced operator in an early operation. The patient's chances are lessened by holding off until a well or illy-defined or multiple abscess or abscesses have formed. At one time we had little or no experience, and but little manual dexterity, with a cloudy knowledge of the disease and a strong desire to unlearn and re-educate ourselves. The modern pupil or ex-resident possesses refined knowledge of pathology and diagnosis, and surgical resources, methods and materials that we could not even hope for. Now, with this splendid preparation for going on with this important work, why should we ever leave it to nature or blind chance, or the watch-and-wait methods? Our accumulated knowledge of the pathology, diagnosis and extensive sequelæ of the disease is accurate. I rejoice that the laity are demanding more of us, demanding a precise diagnosis and early interference.

We must both teach and encourage men to prepare for this great work. Our assistants and pupils obtain successful results. The object lessons at our operating tables are of immense practical value to physicians with but little experience in general surgery. We must simplify every detail to avoid the risks of such men handling infected tissues, and spreading an infection of a local nature.

Early in the history of the Johns Hopkins Hospital, the surgeons taught that drainage was an admission of imperfect or dirty surgery. A short time after this criticism they reported a case of general septic or purulent peritonitis saved by general or multiple drains, pelvic, central and loin drains. Since the recovery of that patient, about all the surgeons connected with the institution have scientifically practised and taught drainage. It is difficult to discuss the subject of exposure and manipulation; some operators, fortunately few, cannot do abdominal operations, except through openings from bone to bone. One came to our city and did four gall-bladder operations. They all died. I was greatly surprised about a year later when I was summoned to save a fifth, who was dying from bowel obstruction. I found about all the abdominal viscera fastened firmly to that lengthy incision. I make this reference to fortify the point I wish to make in regard to rude manipulators or rude operators. Some men cannot possibly eviscerate a patient without killing. Others can lay out all the intestines, free general agglutination, make either a wet or a dry toilet, and cleanse dirty infected bowel and omentum, clean empty loins, pelvic cavity, puncture distended bowel, collapse it by freeing it of its gas and contents and replace all, with a recovery. Before toilets of any character were practised, all such cases died, and it is only recently that many good surgeons were willing to admit that any of such could be saved. Drainage rarely does any harm; it always does good when well placed. The lower vaginal or rectal methods of drainage always seem more infectious or septic than the upper methods and more difficult to keep clean. I am very fond of toilets and drainage and I have not had a phlebitis or a sepsis of any form follow an operation for many years; but I have seen grave local and systemic infections vanish in a few hours after both wet and dry toilets.

A careful review of the work of active operators, where the material is abundant, shows great improvement in both the simple and complicated cases. They are all doing more finished work. Recently I reoperated on five patients from the same hospital. They had enough surgery for a hundred primary simple cases; one had had her tubes and ovaries removed twice or thrice, her appendix removed three times, adhesions freed once, and one section for a hernia. When I reopened I was promptly convinced of the possibility of the regeneration process; the organs were all there.

DISCUSSION.

Discussion on the papers of DRS. SCOTT and PRICE.

DR. JOHN B. MURPHY of Chicago was asked to open the discussion. He said: Mr. President, there are two or three points I would like to refer to in connection with these papers. We are all seeking an ideal operation. I would change the order in which the first essayist places his important points. He put pain, time, and danger in the order of importance. I should say danger first. Everything else is if minor importance.

We have heard very much talk lately about the small incision for appendicitis, which every man should favor within the limit of his capacity to do effective work without hazard to the patient. That is the key to the length of the incision. The less dextrous need more space and they should not hesitate to take it.

I have found that the best way to locate the appendix after the abdomen is opened is to pass the index finger of the right hand into the incision onto the peritoneum of the anterior abdominal wall and follow it down over the iliac vessels; as you feel the artery pulsate, come upward on the median side and you will uniformly hook up the mesoileum. Then follow the ileum on outward to the cecum. The appendix may be under the liver, but the ileum brings you to the caput, and there is found the appendix, which is a very simple and effective procedure. You will find it by that route more directly and uniformly than by any other. The mesoileum is the most fixed point in all that quadrant of the abdomen.

I am pleased that the subject of anesthetics came up. If there is anything the medical profession needs to be jogged up on it is anesthetics. You will pardon that expression, but it is the most forcible one that came to me. We need to know a great deal more about anesthetics and their use; not the type particularly, because chloroform may be given to an individual with safety. Ether anesthesias can be produced in as short a period of time as chloroform anesthesia without drowning the patient, and with much greater safety. Ethyl chloride or nitrous oxide gas may be used for short anesthesias to advantage, but all anesthetics must be given with judgment and not in a perfunctory manner. The brain is the prime factor in the administration of anesthetics, and not the material used.

I trust that Dr. Price will pardon me for alluding to a personal matter in connection with his splendid paper, and I would not mention it except that I feel Dr. Price's paper will be a part of history and he wishes to have it right. He refers to my early work. I will tell you why my name is not earlier recorded in his history of appendicitis. It is because ..... original paper on this sub-

ject found a resting place in Dr. George F. Shrady's waste basket, as an abstract of it had been published in the *Western Medical News and Reporter,* the official organ of the Chicago Medical Society, December, 1889. The title was "Early Operations in Perityphlitis." It included a report of nine cases of early operation for appendicitis, the greatest number operated on by any one man up to that time. The first case was operated on the second day of March, 1889, twenty days before McBurney did his first operation, which was on the 22d day of March, 1889. I allude to these facts because Dr. Price wishes to have the record right. I go back to the history preceding that time when there were many operations done for appendicitis or perityphlitis, as the disease was then called. They were not then operated on except in the presence of phlegmon of the abdominal wall or loin. Bull, in a paper read before the American Surgical Association, in 1888, and in a paper in 1886, alluded to the fact that these cases should be operated on earlier; that they should be operated before they had a phlegmon present to depend upon. Marcy, back in 1876, removed the appendix in the intermediate stage. The title of my article, "Perityhplitis," I still believe would more closely represent the pathologic conditions of the disease in its acute form than appendicitis. It was then believed that where there was phlegmon and an abscess preceding it the abscess should be opened. The point I made in my paper was that the suppurating focus should be opened and drained before the phlegmon has formed on the basis of the symptoms. The man who did the original good work and reported the pathology of his cases in detail was Krafft of Lusanne. He published the first able, forcible paper on pathologic conditions of the appendix in 1883, in Volkmann's Vorträge, which article induced me to take up the work vigorously, as his statements of the pathology forced early surgical intervention as the only rational means of treatment. So much for the early history of appendicitis.

I am pleased that Dr. Price uses such forcible and incisive terms concerning our attitude of the present day.

As a profession we have accepted the view that these operations should always be done before the appendix has perforated. We have agreed that it is the safest time. We have not been in unanimity yet as to when we should operate where the case has passed beyond the average time of perforation. I have given that very much attention in connection with the work on peritonitis, and I am more and more convinced every day that the statement which I made in the discussion at the Toronto meeting in 1894, that "now is the accepted time for operation," is the one that I will follow more uniformly, if possible, in the future than I have in the past, and I will operate on every case just as soon as I get it. (Applause.) Why? I have had that illustrated very forcibly in the last eight or ten days. The mortality of my last cases has not been from peritonitis; we are through with that.

The mortality has been from pylephlebitis, which occurs after a few days, when septic material is retained in contact with the portal circulation, which gives us that type of infection which we are powerless to combat. Pylephlebitis does not occur early, but usually after the sixth or seventh day, and when we wait we run great risk of this danger. The effect produced by the work of Dr. Ochsner in his encouragement of delay in acute septic cases was to cause us to inquire, Why do patients die when operated in this stage? The answer is, We did too much tearing and manipulation in the peritoneal cavity, which Dr. Price has so well emphasized in his paper. Too many fresh abrasions were made in the presence of virulent pus; this was the natural psychological result from our former experience in the gynecologic field. Surgeons wished to do what the gynecologists did, that is, make a complete operation. In gynecology we had to deal with adhesions in the presence of ancient infections, and with tissues that were infiltrated; the infectious material could not be absorbed by these infiltrated cofferdammed tissues. This was all true in gynecic surgery, as Schultze's able paper showed that 80¼ per cent. of all pus of gynecologic origin in the pelvis was sterile at the time of operation; in its presence we may tear up adhesions, do any type of trauma, so to speak, and yet the patient's life is not hazarded. We can deal with an acute virulent, infectious appendicitis in the first and second days, as the pus is encapsulated by agglutinations; but in the fifth, sixth, seventh, eighth, ninth, and tenth days the danger increases. Why? Because then we break up organic adhesions; while in the second or third day we separate agglutination adhesions, a large amount of which infiltrated surface does not absorb. We obtain good results because we have learned to recognize the dividing line between an organic union which is dangerous when separated in the presence of infective material and an adhesion agglutination, which is not dangerous in the presence of infective material. Tissue that is capable of absorption must not be traumatized, and I am pleased that Dr. Price has laid so much stress on the element of trauma, which has cost so many lives, yet is so easily avoided if we recognize the basic principle of absorption which is induced by the trauma in the removal of the endothelium of the peritoneum. Our stand should be: Remove the appendix when possible, in the presence of pus, without producing lacerations of absorbing surfaces. Always relieve pus tension, which is its greatest destructive and absorptive factor. Drain!

DR. ROBERT T. MORRIS, New York.—I would like to speak immediately after Dr. Murphy for the purpose of clinching the points he has made. They are exactly in line with the trend of opinion to-day, and I hope we will not forget one point Dr. Murphy has made. We have often disagreed upon points; we have had many a fight—never personal. I can agree with the points Dr. Murphy makes and with those made by Dr. Price. I did not

get here in time to hear all of Dr. Scott's paper. But we must remember a few principles and keep them firmly in view.

What is the keystone of success in appendicitis work? Conserving the natural resistance of the patient. If you cause an explosion in his works his wheels won't run. We are all inclined to do too much work; conscientiously, yet too much. We damage our patients sometimes. We commit taxidermy upon them in some towns. We employ unwise anesthetic methods. We use too much time in doing nice, ideal work. We make too many incisions in order to get at all the points of infection, and our statistics are bad because we forget the keystone principle of conserving the resistance of the patient, which would attend to infection better than we could do it, and we prevent him from manufacturing in his works the phagocytes which will destroy the infection and carry on repair. Your patient is a machine. He is a factory. His chief business at the moment when you are called in consultation is to manufacture phagocytes. That, I repeat, is his principal business and occupation. He is called upon to do nothing else. You are to look upon that man as a machine. He is a phagocyte machine. Are you going to step into those works, where the sign "No admittance" is on every door? However, if you are an invited visitor, are you going to step into the works and disarrange the machinery and stop this factory from going on? That is what we have been doing along the line of the old principles, which taught us that we must remove all infection. Remember that point. That was where we all went wrong in the early days of appendicitis work.

We were then trained under the teaching which told us to remove all bacteria from the skin; to remove all bacteria from our hands; to remove all bacteria from the field of operation, and after we got into the abdomen to remove all bacteria that we could find there. That was our stumbling block. In our early surgical work we did not try to conserve the patient's resistance while trying to get out all infection ourselves. That is why some men have given up surgery. They started in with the idea of removing all infection instead of leaving it to the machine. Action and reaction are equal. Patients were pushed out of existence and their surgeons pushed out of practice.

How can we conserve the natural resistance of the patient? Making a short incision is one way of doing it. You cause little damage to the patient by the short incision if you do it in the right way. A too large incision has been known to kill a bear, and precisely the same principle applies to a patient. I am hammering away day after day in replying to arguments against a short incision, in teaching medical classes whenever the question comes up, but I agree with Dr. Murphy when he says that the incision should be governed by the limitations of one's experience. I will admit that the use of a very short incision in appendicitis work regularly requires a higher degree of technical skill. Are we, then,

to drop it because it requires a higher degree of technical skill? Does the best mechanic in your locomotive works put aside his best work because it requires a higher degree of technical skill? Does your great artist cease to put on his finishing touches because it requires a higher degree of technical skill? No. Give the world a higher degree of technical skill. Teach that if other men cannot do it it is their responsibility. Get as near as possible to the highest degree of technical skill in reducing the amount of surgery, or the degree of it. It is the degree of surgery that we conscientiously did that has made terrible statistics in appendicitis in the past, and is still making them at present in some localities. I would not advise any beginner in surgery to use a short incision—not one. I would not, in lecturing to a class of undergraduate students, say much about a short incision. I would hesitate about making it in their presence; but to an audience of masters I would say this: Give us room for the use of the higher degree of technical skill. Let the patient have the benefit of it.

Another way of lessening the resistance of the patient is by bad methods of anesthesia. The length of time employed in operating is another way of lessening the resistance of the patient, or in interfering with the factory, because you produce shock every minute you are at work. If you put a patient under an anesthetic and cut his hair for an hour and a half, you will cause more shock than you may cause by doing a severe abdominal operation, getting in and out in fifteen minutes, so that time is a matter of great consequence, and almost all abdominal operations can be completed, on an average, in about fifteen minutes. There are hardly any operations in the whole field of abdominal surgery that cannot be completed in an average of about fifteen minutes. This audience knows the exceptions. But the fifteen-minute standard is a good one to keep in mind. I would not say this to undergraduates. I do not say it to inexperienced men. But I say to this assemblage, keep in mind the fifteen-minute standard, if you can, for all of your abdominal operations!

I want to refer briefly, again, to the point of removing all infection. In our early work we were misguided. We made a great mistake in trying to remove all infection. But do not forget this: Dr. Dawbarn injected milk into the peritoneal cavity of cadavers and then tried to see how long it would take him to get the milk out and how much sponging was required. He found, after a deal of sponging sufficient to kill a bear, that he still had left enough infection (enough milk that he could not get out, and representing infection) to kill a number of men.

He had done sponging enough to kill a bear and yet had left enough infection to kill a lot of men. What is the lesson? If you cannot get the infection all out, what are you going to do? Leave it to the patient, and he will do it better than you, if you do not destroy his factory and put an explosion into his works. Do not wipe a patient to death; do not flush him to death; do not

paw him to death; do not commit taxidermy upon a still living patient by stuffing him with gauze. It is wonderful to see how appendicitis patients recover if they do not have to bear a severe attack of surgery as a complication.

DR. J. HENRY CARSTENS, Detroit.—Regarding the first paper, I will say that I agree with Dr. Murphy with reference to practising ideal surgery. We ought to try and get a patient well in the shortest possible time. But there is certainly a limit to the various points that have been brought out. I, for one, cannot see how it is possible for a patient who has had an incision made in his abdomen, that may have been carefully brought together with sutures, to get up and move around a day or two after the closure of the incision without stretching it more or less apart and rendering the wound weak. It is utterly impossible for me to believe to the contrary.

I think our friend, Dr. Morris, who made experiments on scar tissue of various kinds and new unions, found that it took about eighteen days to get firm union. Is not that correct?

DR. MORRIS.—Yes; eighteen days before the tissues became as strong as normal tissues.

DR. CARSTENS.—And I have borne that in mind—that it takes eighteen days to get the tissues firm and strong. If I operate on a patient I keep that patient in bed for about ten days or more, having adhesive plasters applied snugly across the abdomen to prevent the wound from separating very much until there is quite firm union. But certainly it takes eighteen days before we will get perfectly strong union in these cases.

As to hernia following operations, I will say that I operated on a young boy four years ago. There was perfect union of the wound. He was perfectly well; but suddenly, last spring, four years after the operation, he got a little bulging, and that increased until he had a hernia at the line of incision. Hence it is shown that even after four years there is still a weak point, no matter how carefully we have closed the incision.

In reference to Dr. Price's paper, I would like to say that on general principles I agree with him. I wrote to a physician in Louisville the other day and said that we must fight the battle of appendicitis all over again. I stand where Dr. Murphy does on this subject. When I see a case of appendicitis I see a patient who needs an operation, and it does not make a particle of difference to me whether it is to-day, to-morrow, or whether it is one, two, three or four days, I will operate on him on that day, because I hold that the longer we wait the more the patient's power of resistance will become lowered, and there will be complications, as Dr. Murphy said; hence the time to operate is when you make the diagnosis.

That, however, does not mean that you should not in exceptional cases wait until to-morrow, or even two days, sometimes.

But the general principle ought to be understood that the time to operate on a case of appendicitis is when you see it. We have a high mortality now from appendicitis. The death records to-day show that more people die from this disease than there did ten years ago. But if you see and examine the records of real and good surgeons you will find that they have decidedly improved, and that they have fewer deaths to-day than they had ten years ago. But why do these others die? They die in the hands of the general practitioners or timid surgeons, who simply procrastinate, and this method of waiting and saying you should not operate on the third or fourth day kills more patients every year than surgery ever did, even when it was in its developmental stage. That is the way I look at it. It is an excuse for general practitioners to put these patients on the starvation treatment. They say to us, I am taking care of the patient; I am doing this and that, and they wait three, or four, or five days, and finally call in a surgeon when the patient is practically in articulo mortis. Then, if the surgeon does not operate, they say he is a coward. If he operates, the patient generally dies; if he does not operate, the patient always dies. So I want to insist that the time to operate really is when we make the diagnosis.

There is another point in this connection that was brought out very forcibly by Dr. Morris and Dr. Murphy, and that is, we did not know as much about operating formerly as we do now. To-day we operate better. We do less surgery. We are not afraid. We do not care whether we always remove the appendix or not. Now, we leave the appendix in sometimes, and that is the way we do surgery to-day. We do not have a rule-and-rod measure and say, this is where the incision should be made, right over McBurney's point, or over the outer edge of the rectus, because sometimes we go in from behind and never get into the peritoneal cavity, removing the pus that we find. We may consider it necessary to simply drain the appendiceal abscess for the time being, and then go for the appendix afterward. We do not always do such perfect surgery as my friend Morris always talks about; nevertheless, I think it is good surgery. We try to get everything, but sometimes we save our patients by not attempting such ideal surgery. That one point I wanted to emphasize—one that we cannot reiterate too often—namely, that the time to operate for appendicitis is just as soon as we make the diagnosis. The general practitioner accuses us of not making accurate diagnoses in some cases. He says that we operate and operate when there is no appendicitis, but when there is simply a colitis. Goodness, we are not responsible for mistakes in diagnosis. When the general practitioner calls us to operate for appendicitis we take it for granted in most instances that his diagnosis is correct, and sometimes we confirm his diagnosis by the symptoms, the condition of the patient, and so on. I think a lot of the cases that our professional friends over in Paris say are colitis are really cases of appendicitis.

but once in a while there is a little leakage from the filled-up appendix, causing infection of the colon; then the patient has all the symptoms of colitis. By and by he will be apparently well, yet in a couple of weeks more the chances are that he will have another attack, and still another attack, and often cases of colitis are cured by the removal of the appendix.

DR. LEWIS S. MCMURTRY, Louisville.—This discussion has already developed the fact that a full, free discussion of the subject of appendicitis by men whose operative experience is large is very opportune. Following the epoch-making discussion on this subject at Toronto in 1894, this topic was frequently discussed all over the country, so that the profession wearied of it, and for a number of years the subject, as a consequence, has been neglected. In the discussion that has occurred this morning, based upon two very valuable papers, there have been a number of things alluded to that are not new. For example, we all remember how our distinguished colleague and pioneer in this work in this country, Dr. Price, has talked for years about "chronic surgery." That has been inveighed against by the speakers who have preceded me, and every one recognizes that time is a most important factor in operating in the abdomen, especially in cases of acute inflammatory disease.

Again, the matter of prolonged anesthesia and its harmful effects, alluded to by Dr. Morris, is another theme to which the discussions of this society have been addressed. But, Mr. President, there are two points connected with the surgery of appendicitis that the profession, even operative surgeons such as are here present, are not agreed upon, and these we should take under careful consideration. It should be borne in mind and published that this discussion is by a body of specialists who are daily dealing with appendicitis, because what goes out from here is somewhat authoritative, and the personal equation of the surgeons brought out distinctly by Dr. Morris is lost sight of; hence a great deal of harm results. The two points I wish to direct attention to are these: Dr. Ochsner, an honest man, a man of ability, a surgeon of vast experience, promulgated a system of treatment that has been very generally adopted by the profession, and since that has been done there has not been by such a body as this any thorough discussion of this subject.

The question this Association should consider is: Is there a class of cases of appendicitis, to which the operative surgeon is called after the initiation and advancement of the diease has obtained, in which it is safer to defer operation than to operate? The profession is interested in this subject. I leave that for a moment and then mention one other feature that we are very much interested in and regarding which there is strong authority upon both sides. It has been touched upon here this morning, but not gone into as it should have been. The gentlemen who spoke felt as though they were under the five minutes' rule and quit too

early. The question is this: In operating in case of suppurative appendicitis, when should we proceed completely, and when should we stay our hand? We know that there are cases of suppurative appendicitis in which a short incision, leaving the wound open, will not complete the operation. If you clean out a puddle of pus, two fingers below the iliopectineal line you will find another puddle. I was called in a case within the last two weeks where a thorough operation was done, and yet that patient is now in danger of losing his life by an abscess opening through the lung, and he is expectorating pus through the lung. But this abscess that is now opening through the lung is shut off from the other abscess, and if a drain could have been established, instead of allowing drainage through the lung, that boy would probably now be well, whereas he is making a struggle for his life which is of doubtful issue. What rule should apply? Should there be any exceptions whatever for the whole profession, not the experts in this room, to defer an operation? Should every case, regardless of conditions existing, be operated on the minute we see it? Are there not exceptional cases? I admit that this system that was promulgated by Ochsner has done much harm (as indicated by the last speaker) by furnishing the non-operative practitioner with a means of resorting to delay, as if based on sound surgical principles, which it often is not. Are there any cases that should be deferred? We know that there are. They are not the ambulant cases, but those where we have the entire abdomen in such a condition that if we operate on the patient quickly we will never get the bowels to move afterward. In a certain proportion of these cases there will be, after awhile, a recession; there will be on auscultation some peristalsis, and then we can do the operation. The question is how to formulate some plan and let the profession in the decision of the question of operation exercise judgment as to how to deal with the cases in hand. That is the first point. The second is as to the operation—when to stop. It is not parallel, as Dr. Murphy has pointed out, to deal with such vicious infection, such conditions as are found here, on the same basis as with sterile pus.

Dr. Charles A. L. Reed, Cincinnati.—I did not expect to participate in this discussion, but it has assumed such a very practical aspect that I can hardly refrain from doing so. The fact of it is, when we begin to formulate principles and doctrines in this Association, those doctrines have the force of law in the community, and hold practitioners to a standard of responsibility. Therefore, the formulation of general principles of conduct should be approached very seriously, and should be discharged with extreme conscientiousness. I confess that I see no way by which this end can be accomplished here or in any other deliberative scientific assembly. We need, however, to have some sort of foundation upon which to stand for our own protection and for the protection of our patients. Personally, this discussion is of extreme

interest to me, because I have experienced all of those embarrassments that come from a lack of settled conviction upon this subject.

In speaking of fixation of the kidney yesterday, I spoke of boxing the compass with reference to that condition, and I may say that I have boxed the compass both ways on this question, too. I began by operating when the diagnosis was made. Then it seemed to me, occasionally, that I was doing that which no conscientious surgeon cares to do—namely, an unnecessary operation. I accordingly began to study my cases with reference to discriminating which patients to operate on and which I should not operate on. I thought I had that question pretty definitely settled; but just then,—this was a year or so ago,—I had an experience that unsettled my new convictions. It so happened that I was called during one week to see three different cases of appendicitis. All of them were acute attacks; all of them had passed the crisis; all of them presented receding symptoms, and I accordingly said to each one of them, "Go on; get better, and when everything is quiescent we will operate." Well, when everything became quiescent I did not operate. The patients changed their minds. In one instance, at least, this change of mind resulted disastrously, for a secondary attack occurred remote from assistance and the patient died. But during that same week, while I was very much satisfied with my fine powers of discrimination, I was called to see a fourth case, likewise acute, likewise beyond the crisis, likewise presenting receding symptoms, and I advised delay with reference to the interval of operation. He continued to get better for the next thirty hours, when he suddenly had an explosion, was operated upon by a local surgeon under very adverse circumstances, and died a few hours later.

This little series of four cases occurring in one week taught me a very profound lesson, and that lesson was only confirmed by the subsequent history of one of the first three—namely, the one who succumbed to a secondary attack. From that time to the present it has been my rule to operate upon these cases when I find them. If I fail to operate upon them at that time, the responsibility will be placed upon somebody else's shoulders than mine.

Within the last two weeks a fellow practitioner called me and said, "I have a case of appendicitis for you to operate on this afternoon." That is progress, when the medical practitioner makes the diagnosis and calls you to operate. I went to see the patient. I said to the practitioner, "When did you see the case first?" He said, "I saw it last night." When I saw the patient he was getting better, but I thought of the lesson I had learned from the previous experience that I have recited. The pulse had come down; the temperature had declined; tenderness was receding. I said to the patient, "We will operate on you without delay." He was taken to the hospital and operated on promptly within four hours after I had first seen him. After making the

incision I was able to get at the appendix without any difficulty; when I lifted it up I found it was very tense, so much so that it reminded me of intraocular tension. There were two areas of ulceration, each presenting a small green area on the peritoneal surface. In other words, there was beginning gangrene. We lifted up the appendix as gently as we could, protected the wound in every way possible, tied off the appendix, closed the incision, and were quite satisfied with the condition in which we put the patient to bed. The next morning there was a little elevation of temperature; the second morning the edge of the incision looked a little red, although there was not an intraperitoneal symptom. The patient's bowels moved; the stomach behaved well. There was no distention. I opened the wound and it was as black as a black hat, one of the worst cases of wound infection I have ever seen, but fortunately localized. There was a gangrenous wound from incidental contact with the appendix that was at the point of rupture, and one that would have ruptured in the next two hours. That was the condition of affairs revealed under receding symptoms. If it had not been for my previous experience, I would have been disposed to defer interference for a little while, so that the patient might get into the quiescent period, and then do the operation in the interval.

Pus in the pelvis or in the abdominal cavity is always dangerous, and appendicitis is always potential pus. Remember that. You cannot get away from that dictum. Therefore, after an experience that has been all too vacillating on my part, but undertaken conscientiously to find some ground upon which I could stand, and justify myself and do my duty to my patients, I stand here this morning a confirmed convert to the principle that appendicitis ought never to be trusted, and that the time to operate is when we find it. (Applause.)

A word or two on the question of incomplete or complete operation and then I am done. Within the last month I was called to see a case of delayed operation. It was a mistake in diagnosis on the part of the attending physician, a good man. It was the fourth or fifth day. The constitutional conditions were not bad. I immediately cut down and found a large deposit of pus, which spurted through the incision. And as it seemed to me that much of the surface was involved, I thought there was no occasion to fish around and search for the appendix, thinking I might contaminate the peritoneal cavity, and I did the Ochsner trick. I made a large incision, dropped in a little piece of gauze, and applied a drain. The patient at that time had a temperature of 100.5°. The next morning the temperature was normal; pulse was normal, and the patient appeared to be doing very well. The following morning, however, I was called very hurriedly to see that patient, who had had a distinct explosion of some kind, a septic explosion, as if no operation had been done, and he died in fifteen hours. Now, gentlemen, in the future I shall open

these abscesses, clean them out, and, if possible, remove the appendix, disturbing the phagocytes as little as possible. And I will be exceedingly polite to the leucocyte factory, but everything on the surface is mine, and I will take it.

DR. JAMES F. W. ROSS, Toronto.—This is a very valuable discussion, and I hope we shall not infringe on the time set for the president's address. I am particularly pleased to discuss this subject, owing to the fact that it was in my native city that Dr. Murphy made the statement that he would operate on every case of appendicitis as soon as the diagnosis was made; that he would not wait for the patient to have another attack. When he made that statement a chill went through the audience. Many of the old-fashioned practitioners were there at the time and heard it. But that time has gone by, and there is no further question about the time to operate. One of our younger surgeons, who was attacked at the operating table in the morning, had a gangrenous appendix removed in the afternoon. There is no doubt that operation should be done at once, and before perforation takes place. But I am something like Dr. McMurtry, in that my early experience taught me that it was dangerous to fool with adhesions in the presence of such virulent material, and I had a number of deaths. I expect this afternoon in the discussion on Dr. Murphy's paper to give my experience with reference to diffuse purulent peritonitis. I have had a number of deaths from that condition. I then adopted the plan, if the period is reached when we have a mass and want to relieve tension, of making an incision, putting in a piece of gauze, and then leaving the case alone, as I have found that by disturbing these adhesions on the fourth or fifth day absorption is great and the patients die. This practice did harm. Others were then afraid of having an operation done. Interference in these cases, attacking and pulling everything out and cleaning it off, only opens up and exposes the rest of the cavity to the germs, and that is an extremely dangerous procedure. Whether I shall change my opinion later on remains to be determined.

One other point: As to waiting for an attack of appendicitis to pass off in order that one may perform an interval operation, I have for a considerable period ceased to do that. When once the diagnosis is made, say within two or three days, in my opinion there is nothing left but the knife for the patient. It is the treatment I would want applied to myself if I had appendicitis, with adhesions, but if the fourth or fifth day of the attack had been reached I should think carefully before I submitted to an operation. I would want to know what the surgeon intended to do at the time of the operation, and if he was going to do the complete operation referred to by my friend Dr. Reed I should decline to be operated on. I think the main point in this discussion is how much to do, and when to stop, when the patient has reached the condition referred to. These are my opinions at

present regarding this subject, and I hope I have made myself clear.

DR. WILLIAM H. WATHEN, Louisville (by invitation).—It was not my purpose to participate in the discussion on this subject to-day until the president asked me to do so. Fortunately, I was a charter member of this Association and it is a serious regret that I have not been able to continue with you, because of the excellent work you are doing.

As to the subject of the operative treatment of appendicitis, I agree most heartily with the assertion that every case should be operated upon when diagnosticated. This is not only based upon what I have heard and read upon this subject, but upon my own personal experience and observation. A great fault in delay is the fact that just when the appendix ruptures, or when it becomes gangrenous, very often the temperature goes down to normal; the pulse likewise goes down to normal, and it is thought the case is progressing well. The delay, therefore, is too long until it is too late to do the patient any good. I have recently had several patients of this sort upon whom I have operated, with perfectly normal pulse and normal temperature, with either rupture of the appendix, or a gangrenous appendix, all of whom made prompt recoveries because the operation was done sufficiently early. I believe in doing as little traumatism as possible to the tissues, and I have not for ten years used irrigation in my abdominal work, believing that I necessarily produced traumatism that would impair the resistance of the epithelial structures and probably wash away the protection naturally existing—the phagocytes. Therefore, I believe in operating as quickly as possible, as soon as the diagnosis is made, and irritating the stomach as little as possible, draining the patients thoroughly where I have the purulent variety of infection to deal with.

The question is what we should do when we have a purulent accumulation which is largely an individual equation. Each man must treat the case in hand according to the conditions that exist. I believe in making as thorough an operation as possible, consistent with not producing too much traumatism. I believe in enucleating the infected area, the purulent accumulation, where we can go on the inside to the left of the appendix beyond the infected area; wall off with gauze the infected location, and then if we do have pus coming out of an abscess we protect the cavity from it, and we can by that means very often get rid of a large infected area and remove the appendix. Of course, it is ideal surgery to remove the appendix, if possible, and cure the patient; but there are cases in which, if we attempt such surgery, we will kill the patient; where the best thing to do is to make an incision, and if the appendix does not come properly into the wound, let it alone. If you manipulate too much to find it you will open the free peritoneal cavity and drain infectious material into it which will probably cause the death of the patient;

whereas if you simply drain this tube with gauze the patient is likely to get well. The isolated cases, such as were given by Dr. Reed to-day, may be met with at any time; but future observation and comparison of the individual results of the men who are doing surgery in this line may finally enable us to draw a line between simple or incomplete operations and complete operations, giving nature an opportunity to do the work.

DR. HERMAN E. HAYD, Buffalo.—I was not going to take part in this discussion, but as my friend Dr. Ross injected into it a very acute fulminating infection, I cannot refrain from saying a word or two. I understood him to say that if it were himself, after the fourth or fifth day of an attack of appendicitis, he would be very slow to be operated upon. I do not believe that his experience, nor the experience of the men here, will justify him to take that position. I have made up my mind, after a good deal of study in connection with appendicitis, that we know very little about the behavior of the appendix, excepting that if we do not get it out when inflamed the patient will often die. I have ceased to regard the pulse; I have ceased to regard the temperature in appendicitis. Only a few days ago, just before I left home, I operated upon a coal-heaver, who was sitting on his wagon and delivering coal that morning, and we operated him at 10 o'clock. His abdomen was greatly distended, filled with inflammatory material, and with an acute gangrenous appendix, as well as an acute gangrenous cecum. He died; and yet that man had a pulse of 100 and a temperature of 99°. That is not an isolated experience. Everyone of you has had a similar experience, and when Dr. Ross said that he would defer in late operations, really, I was surprised. There is really no late time; the patient should be operated when first seen, if capable of bearing any surgery.

DR. ROSS.—Dr. Hayd misunderstood what I said. I remarked that if I was in the fourth or fifth day of the disease I would want to know whether the surgeon was simply going to make an incision and drain, or whether he was going to do a complete operation.

DR. HAYD.—That is a different proposition. I am very glad Dr. Ross answered me promptly, because I am sure many here interpreted his remarks as I did.

I agree perfectly with all of the preceding speakers, that we must operate, and operate at once, in these cases. It becomes largely a question of personal equation. If surgeons were honest with themselves, they would soon learn their limitations. One man can go into the abdomen in fifteen minutes and clean it out thoroughly, while it will take another man half an hour to do the same, and, worse still, another one could never do it; and yet he may be a distinguished professor of surgery in one of the famous medical colleges of the country. If it were possible to put our fingers into the abdominal cavity and see the limitation

that exists there, if there were no secondary abscess, then we would be perfectly justified in retreating. But we cannot do it. You must break up the adhesions, and the man who does not go into the abdomen in a case of appendicitis and do this, and take out the appendix, I do not care whether the pus or abscess is localized, is a coward. If he is skilled, he can take it out with as little trauma as possible.

I am willing to concede that I have learned a good deal from Dr. Murphy this morning. Everyone learns a lot from him. He came here and told us that he had experimented some with the Ochsner treatment. While I have believed there was next to nothing in that treatment, still he has persuaded me, by reason of his personal experience with it, that it has a place, where the dangers of late operation for appendicitis exist. The keynote of success is to do as little injury as possible, opening the abdomen as quickly as possible, and closing with equal promptitude. That is the secret. It does not matter how you treat the stump; it does not matter whether you invaginate it, or cut it, or touch it with carbolic acid, these patients all get well, if you operate early enough. Many patients do well in the late conditions if you do not do too much surgical harm.

Dr. Hugo O. Pantzer, Indianapolis.—I wish to call attention to a differential point that will definitely indicate between a case getting well, as shown by oral temperature, pulse, and by negative conditions on the one hand, and one apparently likewise, but which in the sequence develops to fatality, on the other. The rectal temperature, both relative and absolute, as compared with the oral, will in these deceptive cases show anywhere from one and a half to three degrees or more above normal. I venture to say that the cases cited by Dr. Reed, which apparently did well when an operation was postponed, but which afterward showed up so gravely, would have every one of them revealed a significant rectal temperature.

Dr. Montgomery Linville, Newcastle.—I simply want to say that I am glad I am here. I am glad for one special reason—namely, that this is the first surgical meeting I have ever attended in my long years of experience where so many great minds were of one opinion, and I want to congratulate my old friend and preceptor, Dr. Price, on the victory which he seems to have won. For many years he has labored and fought for immediate operation in appendicitis. He has labored so earnestly and zealously that many of his critics call this his great hobby. I am glad to see that he has lost his hobby and that in future he will have to hunt for another.

Dr. A. M. Vance, Louisville.—I think the keynote of the situation, at present, is to educate the laity up to the point of calling in a man who knows what to do when a patient has something the matter in his abdomen. I have been practising surgery for

many years, doing whatever work came in my way, but I do not believe that I have yet been the first one who has been called in a case of appendicitis. Usually some other practitioner has seen the case before I have been called. Now, you cannot educate the people through that practitioner. You cannot say, "My good old friend, why do you hang onto this patient and purge him, smoothing things over, when you should call in a surgeon to operate?" Appendicitis is a surgical disease, and the people should be taught the importance of that, and when they fully realize it we will get these cases in time to save them. It is our province to educate the people up to the point of calling in a surgeon promptly, otherwise if we operate late and the patient should die we get censured.

DR. WILLIAM M. BROWN, Rochester.—I wish to call attention to a means of diagnosis and prognosis that is really more valuable than the temperature and pulse in appendicitis, and that is a careful, repeated differential white count.

DR. PRICE (closing the discussion).—I love you more than tongue can tell. You further know that I would not come here to hurt the feelings of any Fellow, as I would rather remain at home. I have repeatedly said that it is a waste of valuable gray matter—yes, a positive waste of it—for us to come here and make these discussions, which have so limited a circulation. If these discussions were published in the medical journals of fifty-two States, they would be of great value; but you know that they are now published in a journal that is largely of a local nature. The old Transactions of the Philadelphia Obstetrical Society were published in twenty-one medical journals. We were then the objects of attention, curiosity, and criticism. Chicago would preface her remarks by saying, "East of the Alleghenies they say so-and-so" (laughter). I really feel that a lot of surgical masters have discussed this subject to-day.

I addressed four hundred active, rosy-cheeked practitioners not long ago on this subject, and I did not have to observe the Marquis of Queensbury rules. I went to a county society not long since, where I met a lot of men who wanted to know something about my views on the subject. I say these things because it would have been thrice more valuable for the American people had these discussions been made in twenty States before twenty county societies. It would have resulted in great good. As it is, these discussions will have a limited reading.

We all value simplicity in our work. We like to hear prominent operators and teachers who can give us object lessons both in operating and in teaching. I am surprised that more of us are not jugglers. Dr. Senn and others, who returned from England years ago, after having seen Tait do operations, said they did not know whether he used silk or some other material, as he did his operations so quickly. Senn said that he slipped his two stubby

fingers into the incision so quickly and removed the pathology that he scarcely knew it was pathology. Tait did a large number of operations at No. 7, The Crescent, and onlookers scarcely knew how he did them, or what he did them with. Tait was a juggler. We saw a juggler work last night at the entertainment given to us. We were given object lessons. It requires great skill to make an incision, expose pathology, remove it, and give others a picture of it as we see it, at the same time making a proper toilet. All this takes time. You know that in baseball the pitcher and catcher work well together. And so must the anesthetizer and operator, and then they play a good game.

Dr. Ross, Dr. Hayd, and Dr. Reed got together on an important point, and all of them felt it acutely. Dr. Reed began his work nearly a quarter of a century ago. He told me this in a conversation I had with him. He was right in his views of this subject twenty years ago. Recently he has written on other scientific subjects; and Ochsner has influenced him some as regards the management of some of these cases of appendicitis, particularly when a patient was feeling comfortable. A subnormal temperature is a bad symptom, I said to a lady who was opposing bitterly operative intervention, when I saw her beautiful boy with appendicitis on the fourth day from the onset of the attack. I said to her, "Your boy is in a critical condition." "But," said she, "his temperature is down." I replied, "I regret this, because it would be better for the boy if it were normal, or a little higher than normal; he has a subnormal temperature." He had two unfortunate symptoms. I wanted to operate on him as soon as possible and she said to me, "You came here with your mind made up to operate on my boy." I said, "No, my dear madam, I have seven children myself, and no surgeon should operate on either one of them unless I thought it was absolutely necessary to save life, and if you will permit me and give your consent to have the boy operated on, I will try to save his life, as, without an operation, I do not think he is going to get well." I further said to her, "If you will permit me, I will call in two good clinicians to see what they say about the case." She gave me a push and said, "Take him." He was operated on as soon as possible and his life saved.

Now, to get at the vital point. Dr. Reed cited a case in which the patient on the fourth or fifth day was feeling comfortable, and he decided to let him go for an interval operation, but the following morning there was an explosion and the patient died. That is an answer to Dr. Ross. In his case he made an opening, found a little lemon-colored signal (?). I do not know how far he went, but he receded; he put in a little cigarette drain, and during the following morning there was an explosion of some sort and the patient died. Had he gone a little further, just a little bit, he might have settled the degree and extent of invasion of the pathology. Had Dr. Reed gone as far as Dr. Murphy has told us

with his finger and reached quickly the appendix, the cecal side, with the finger flexed, to determine whether the distal side of the ileum was healthy or not, or had removed that appendix, and made whatever toilet was necessary, or drained, the probabilities are that patient might have recovered. The point I wish to make is that, that we should go as far as the pathology goes.

I am very glad I read this paper, because it had the effect of drawing out the views of Dr. Murphy. He has given a review of Kelly's work. It was a magnificent review of a magnificent book; but he dealt with the artistic features of this scholarly publication. Now, I would like him to write one more review upon the pathology of this disease, as he is the best man in America to write it, and say nothing about the art of it, but rather the pathology and depth of it.

If you will read McCosh's account of admissions of patients to the Presbyterian Hospital, New York, you will find fifty came in ambulances. I know that some of these patients die in the ambulance. They went to the limits of the pathology, removed it, and saved twenty-nine of them. I am dealing with other people's procedures, and not my own. I believe in dealing with these cases in a radical way, finding the depths of the pathology and removing it if it can be done.

At Saratoga, in 1902, I was told that if I published a paper I had read it would destroy more lives than Mauser bullets. Let us see what follows. The Mayos went home and found three patients in their medical wards upon whom they refused to operate, and all died. They received the Ochsner treatment. They operated on eleven patients, with six deaths—patients that Murphy saves, that Morris saves, and most of you save. There we have a record of nine deaths out of fourteen cases; yet in Murphy's statistics, with perforating forms of gangrenous pathology, we have seventeen recoveries. Contrast the results.

CHRONIC DYSPEPSIAS RESULTING FROM PELVIC AND ABDOMINAL DISEASES, AND THEIR SURGICAL TREATMENT.

BY

HERMAN E. HAYD, M.D.

Buffalo.

In using the term dyspepsia, I am employing it with a comprehensive significance, since it does not represent any particular disease, nor is it the symptom of only one diseased organ. It is a complex term, and signifies a disorder of the processes of digestion. Various organs of the body are of necessity employed in this complicated function, and they can be disturbed, either as a result of disease in their own structures, or by reason of reflex irritations conveyed to them from other remote areas. The gastrointestinal apparatus is supplied and controlled in its functions by the great sympathetic system and its branches; and through its minute and complicated plexuses, all the other organs of the abdominal, pelvic, and thoracic cavities, which are contributory to the process of digestion and the subsequent elaboration of the food products, such as the liver, spleen, kidney, pancreas, as well as the genito-urinary and sexual systems. And so intimate and delicate is the association and connection of these many organs, through this intricate nervous supply, that irritations of one organ are transferred to the others, and symptoms referable to disturbed functions of one are often assumed and masqueraded by the others. Owing to this complexity and variety of symptoms, errors in diagnosis are necessarily made by all of us, but more frequently the more we limit our knowledge to some special organ and focus all symptoms from that organ. Moreover, it is possible for an individual organ like the uterus or kidney to be out of position, and yet produce no symptoms for many months and even years, or an individual may have a great many sources of reflex irritation acting all at the same time, as a retroverted uterus with a torn everted cervix; a floating kidney with its often associated chronic appendicitis, gall-

bladder and rectal troubles; marked errors of refraction or phorias, and each may or may not be contributing in the symptomatology. If the surgeon has in mind the varied possibilities of reflex irritations, and works out those of peripheral origin with the assistance of other capable and honest specialists, too much will not be promised by any one procedure, nor will extravagant hopes be encouraged, and the opprobria connected with fruitless operations will be materially lessened.

Unfortunately, we have so few pathogneumonic signs and symptoms in the practice of medicine, and anything which will throw light on any particular case must be utilized. Dr. Morris—one of our esteemed Fellows—published a very interesting paper in the May number of the JOURNAL OF OBSTETRICS, in which he pays special attention to tenderness upon deep pressure on each side of the navel—a point corresponding to the position of the lumbar plexus. He maintains that these two spots, although always more sensitive than the surrounding tissues, become hypersensitive to pressure upon both sides if the trouble be in the pelvis, whether in one tube, or ovary, or uterus, or all combined. If the appendix *only* be the seat of disease, *only* the right side of the navel will be oversensitive, and if the gall-bladder be involved, and even if there be extensive adhesions, there will rarely be increased sensitiveness, even on the right side of the navel. If the reflex irritation comes from the eyes, or ears, or nose or other peripheral areas, there will be no increased tenderness on either side of the navel. These suggestions are valuable, and if carefully studied, may be of great service in working out the details of some complicated case. I have been applying these tests for years and have often found them of great value.

Although not specially connected with the subject of my paper, let me allude to the rectum as a very prolific source of reflex irritation, and to the penis, and especially the deep urethra, because many forms of chronic and rebellious dyspepsias are cured by dilating a morbidly-contracted sphincter ani, or ablating piles, or curing an irritable ulcer or fissure, or by retracting a long prepuce, or performing a circumcision and meatotomy, and subsequently passing a cold steel round for hypersensitive deep uretheral patches and stricture of large caliber.

Instead of presenting a series of many cases of dyspepsia cured by operations upon the abdominal and pelvic organs

I shall simply detail the histories of a few cases which represent a group of many similar surgical experiences:

Miss V., æt. 35; seamstress. Complained of distress after eating and bloating in the bowels, and was excessively nervous. Also pain and uneasiness in the right side of belly and tenderness upon deep pressure. She had been wearing glasses carefully fitted by one of our best oculists. Her loss in weight during the past seven months was fifteen pounds.

Diagnosis.—Chronic appendicitis.

Operation.—Found a long, hard, closed appendix, at least five inches in length and with few adhesions. Left hospital on the twelfth day with a sense of perfect relief from her distressing stomach symptoms, and has remained a well woman.

Mr. B., æt. 26; floor walker in one of our large dry-goods stores; sent for me December, 1903, and complained of pain in the lower right side over the appendix. He was thin, nervous, and very dyspeptic, and had doctored with various men, and had taken various prescribed diets; in fact, was now on the Salisbury beef cure. He really looked like a consumptive; thin and haggard in his appearance.

Diagnosis.—Subacute appendicitis.

Operation.—Appendix soft, slightly inflamed at tip, and contained a cantelope melon seed. He had eaten no melon in eleven months. He gained rapidly in strength and flesh, and is to-day a well and vigorous man. How long the appendix contained the foreign body it is impossible to say, but perhaps months or even years.

Mrs. W., æt. 34; wife of a physician. Two children, youngest four years old. Came under my care July 28, 1904, suffering with marked dyspepsia. She had been treated by our very best stomach specialists. Her distress after eating was very great. She was excessively nervous and had lost over twenty pounds in weight. She had been dieted vigorously and was eating malted milk and zweibach when I first saw her. She had practically no pelvic symptoms—only a little backache at times.

Diagnosis.—Endometritis, bilateral laceration of the cervix, with much scar tissue; retroversion, cystocele and rectocele.

Operation.—Curettage, with Emmet's operation for cervical laceration; anterior and posterior colporrhaphy and perineorrhaphy, and an Alexander. She began to improve immediately, and before she left the hospital was eating anything

and everything, and weighs now one hundred and forty pounds, and is a well and happy woman.

Mrs. C., æt. 38. One boy 13 years old; no subsequent children and no miscarriages. In March, 1903, she consulted me and complained of distress after eating and pain and fullness in bowels and lower right side, extending into leg; insomnia and nervousness and heart symptoms; in fact, it was her cardiac symptoms which alarmed her.

Diagnosis.—Acute retroflexion, with slight adhesions of right tube and ovary, and a floating kidney, extending nearly to navel.

Operation.—March 12, 1903, curetted and removed, through a median incision, a portion of the right ovary and released a distorted and adherent tube and suspended uterus forward to edges of rectus muscle; the appendix was small and felt hard, but was not removed. Three weeks later did a nephropexia, and she left the hospital in four weeks. After being home a few days and moving about, she complained of pain in the lower right side, and one evening I was called because her distress was considerable. It was at once evident that she was suffering from a mild attack of appendicitis. The attack passed off and she did very well, but frequently she has had a good deal of pain in the right side, and in fact, is always conscious of some tenderness in the lower right quadrant andistressed with gas. She has gained thirty-six pounds in weight since the operations. I am satisfied had I removed the appendix when the abdomen was opened, she would now be a perfectly well and happy woman. Here is a case where all three conditions contributed to her suffering, and she remains an uncured woman because of my incomplete surgery. She is willing and anxious to go to the hospital to have the appendix removed, but her father objects to any more operations.

Miss H., æt. 39; seamstress, and a very intelligent woman. Consulted me on September 20, 1904, complaining of great pain and distress in the lower right quadrant, and marked dyspeptic symptoms. She had previously doctored with first-class stomach specialists, who also sent her to an eye surgeon, who gave her glasses.

Diagnosis.—Chronic appendicitis and floating right kidney. Retroversion.

Operation.—Through a median incision I removed a long, thickened and angulated appendix, which was slightly adherent

to the bowels in the left side, and in it was a small concretion, and I also shortened the ligaments intraperitoneally. She improved in health and gained very much in flesh, and left Buffalo and took up her residence in Washington. After being there one year, she consulted Dr. Bovée for pain and distress in the lower right side, and went to the Columbia Hospital. He suggested an operation for adhesions, to which she objected, and returned to Buffalo. After studying her case a few weeks, I decided to perform a nephropexia, believing that her pelvic distress was reflex from her floating kidney, which was very loose and prolapsed. The operation was performed on May 25, 1906, and she left the hospital in four weeks. I saw her a few days ago when she was well, contented, and happy.

Mrs. B., æt. 62. Mother of five children, youngest 20 years of age. I was called to see her on December 3, 1904, and found her suffering great pain over the pit of the stomach, and upon pressure she was very tender. For years had been a terrible sufferer from dyspepsia, and had had attacks of vomiting of blood eight or ten years previous to this present illness.

Diagnosis.—Peritonitis, and perhaps due to duodenal ulcer or cancer.

Operation.—Found an hour-glass contraction of stomach at junction of middle and lower third. After slitting the lesser omentum and lifting up the stomach, there were a number of adhesions; in fact, everything seemed to be matted together. Upon separating the different structures, a perforating ulcer, closed up by these adhesions, was found on the posterior surface of the stomach, and close to the lesser curvature; a V-shaped piece was cut out of the stomach, which also took in the ulcerated area, and the walls of the organ were brought together with a double row of silk sutures, and a small drainage tube was left *in situ*. The woman did well until the fourteenth day, when the wound opened up and began to discharge first pus, and then food contents came through the opening. However, gradually the fistula contracted, but in the seventh week after the operation, when she was at home, she died of pneumonia. Here was a dyspeptic for years, and could only have been cured by surgical measures, yet she was permitted to go on suffering and was dosed *ad nauseam*.

Mrs. B., æt. 40; four children, youngest 6 years of age. Very healthy, vigorous looking woman. Never had jaundice, but

for years had suffered from indigestion, gas in stomach and bowels, a sense of fullness and obstinate constipation. Vaginal examination negative. Upon palpation and deep pressure over region of gall-bladder, pain and tenderness were elicited and also the statement that frequently the pain over this region was so great that the pressure of the skirt bands and corsets could not be borne.

Diagnosis.—Subacute cholecystitis and possibly gallstones.

Operation.—March 10, 1902. Upon opening the abdomen, through a right lateral incision, the gall-bladder was seen full and somewhat distended, and its coats were thickened, but the glistening color was everywhere evident. After packing off carefully with gauze compresses, a big needle attached to a syringe was thrust into the bladder and a large quantity of a thick, dark, viscid, yellowish fluid was removed, and four large gallstones—two of them each the size of an olive. A drainage tube was placed in the gall-bladder and fixed, and the wound closed. At first the drainage was not good, but after four days bile flowed very copiously. The patient made a quick and satisfactory recovery and has been in fine health ever since the operation, and practically relieved of her distress and dyspeptic symptoms. This case serves to show that gall-bladder disease, and even stones can exist for years and be of large size and yet never cause any jaundice or very active symptoms, other than those ordinarily diagnosed as simple indigestion.

In this list, which I could have considerably enlarged upon by giving my experience with many similar cases, we have various pathological conditions, all capable of producing marked stomach symptoms, and ill health, and each case was treated for months, and even years for dyspepsia, and all were cured, and if not, were greatly relieved, by various operative procedures. They represent, moreover, a class of cases which were, up to a few years ago, considered purely medical, and were placed in the medical side of the hospital. They reflect, in strong language, the possibilities of present-day surgical practice, and in no small measure the great advances made in scientific medicine, and they serve to demonstrate and to suggest the still greater possibilities of surgical relief for many of the dyspepsias, che result of true structural disease of the stomach, such as thronic gastritis with dilatation, gastric ulcer, with or without hour-glass contraction; thickening and narrowing of the pyloric

orifice, early cancer when the possibilities of total removal exists, and many forms of pancreatic, duodenal, and hepatic disease.

It is hardly twenty years since the diseases of the lower right quadrant were fearlessly attacked by the surgeon, backed up by the pathologist, and that appalling malady, acute appendicitis, made benign under early surgical interference, and I believe in less time in the future, will the advanced and scientific physician turn over to the surgeon early in the course of the disease, all structural lesions of the stomach and bowels, as well as all the gross diseases of the liver, gall-bladder and pancreas for early rational surgical treatment.

DISCUSSION.

DR. EARL HARLAN, Cincinnati (by invitation).—I have been very much interested in the subject which the essayist has so thoroughly presented to-day, on account of having read a paper upon the "Surgical Treatment of Intestinal Indigestion" at a recent meeting of the Ohio State Medical Society. Intestinal indigestion is a term which may be applied to a condition of chronic intestinal disturbance characterized by sour stomach, with occasional nausea and vomiting; indigestion; nervousness; general appearance of malnutrition and debility; biliousness; indefinite abdominal pain, with distress, anxiety, or discomfort, more or less constant; the persistent presence of an excess of stagnant gases at some certain, apparently constant, point in the bowel, with constipation or diarrhea. The presence of these latter symptoms usually concludes the development of one or other of the following conditions: enteroptosis from general constitutional ailments; dislocations of single organs, as of the spleen, kidney, or prolapse of the anterior border of the liver, a condition which I have recently had occasion to note and treat; diverticulitis, with mesenteritis; ulcer of the colon; the interference with the normal lumen and motion of the bowel produced by binding adhesions, as that of the omentum, or the deposition of lymphatic rings of constriction (these latter usually occurring in the ileum); appendiceal irritations and congestions which produce symptoms simulating those of appendicitis, and usually produced by kidney dislocations; ptosis of the cecum; uterine retroversions or adhesions about the pelvic organs; concretions in the appendix; the predeveloping stages of hernias; rectal hemorrhoids or ulcer; or any pathological or mechanical condition within the abdominal cavity which will produce a partial obstruction of the bowel, which lesions consti-

tute the true cause of the train of symptoms known as intestinal indigestion. Gross ailments and pathological changes in the various thoracic and other viscera are excluded by differential diagnosis.

There are also symptomatic and pathologic lesions of the heart, liver, kidneys, and gastrointestinal tract, these being due to the misapplied functions and lowered nutrition of the latter organs, and resulting from the absorption of the ammoniacal products of a perverted digestion. Inspection reveals a distended, potted condition of the abdomen, percussion of the latter revealing a general distention of the stomach and bowels, with a tendency towards ptosis of the whole contents of the abdomen. Palpation reveals tenderness at some particular point, which locality is usually the seat of a more or less persistent, dull, aching feeling of distress or discomfort to the patient.

When of a severe and chronic nature it is usually a forerunner of a developing lesion, as above stated, either of an inflammatory or mechanical type, which will ultimately result in some acute obstructive condition which will precipitate the necessity of immediate surgical interference, finding ultimate expression in appendicitis, gallstones, acute obstruction produced by binding adhesions, or the mechanical pressure interference of a dislocated organ, as of the spleen, kidney, or anterior border of the liver; ulcer of the colon, rectal ulcer, hemorrhoids or hernias, or acquired multiple diverticulitis. Lesions producing this condition are usually located at some point along the large portion of the bowel, and are the result of mechanical obstructive interference with the normal motility of the bowel, the normal anatomy of the latter being so disarranged as to bring about a corresponding pathological change in the physiology of digestion.

These cases, taken at the start and treated by a logical regimen of diet and methods of living, may be corrected. Left to persist for a long period under the causes which produced them, they result in pathological lesions which may be reached only by surgical intervention.

After persistent medical treatment has failed, surgical measures become necessary. Surgically speaking, the logical treatment of intestinal indigestion is, therefore, the radical removal of the lesion which produces the symptoms, or a procedure which will bring about the permanent relief of the latter, for example, the removal of the partial obstruction, the same principle applying here as in the treatment of gastric indigestion from ulcer, that is an effort securing rest and free drainage through the normal and unobstructed lumen of the bowel.

Diverticulitis or ulcer of the colon furnishes ideal conditions of intestinal indigestion, and justify the procedure of short circuiting the colon either by colon anastomosis, ileocolostomy, or ileosigmoidostomy. I do not favor the external drainage of the bowel, in conditions of the colon requiring this treatment, by

colostomy, or appendicostomy, but prefer the internal method of drainage by short circuiting the bowel by the anastomoses named above, as it is just as safe and not nearly so inconvenient and disagreeable to the patient, it having been demonstrated by Treves, Richardson, and the Mayos that all or a part of the colon can be removed with success and safety, and that the latter can be entirely short circuited when necessary in the treatment of malignant and ulcerative diseases of the bowel and in the relief of fistulous openings. Coffey of Portland cites a case of colonic ulcer successfully treated by ileosigmoidostomy, while Gordonier and Sampson recommend a like procedure in diverticulitis with mesenteritis.

I may also state that the above method of treatment may be successfully applied for the relief of the obstruction produced by dislocations of organs that cannot be replaced by operative treatment, as of the liver, spleen, and kidneys, and that operative treatment directed toward the relief of these conditions must have for its primary purpose the securing of rest and the establishment of thorough and unobstructed drainage.

DR. ROBERT T. MORRIS, New York.—This is an extremely important subject, one we have just begun to unravel. I use the word unravel, because we have a very complex question to solve in the matter of the symptoms depending upon different peripheral irritators, and it is with great difficulty we classify our facts for accurate knowledge.

The symptom of intestinal indigestion I look upon as a demonstration rather than a diagnostic entity. If a patient suffers from intestinal indigestion, I say to him or her, you have intestinal indigestion, but it is only a cough or sneeze inside somewhere. What is exciting that cough or sneeze in your interior? We will find out. It is an important matter to work the problem out correctly. One patient will have tremendous reflex trouble from a reflex peripheral irritation; while another patient will have no reflex symptoms at all. One patient will do a hard day's washing over a wash tub, milk four goats, and do other things with a condition that would send other women to bed as invalids. You must classify your cases well. You must know what peripheral irritation is making the cough or sneeze inside of the patient.

An extremely grateful patient came to see me the other day. She said, "Doctor, you got the right man for me. I have seen thirty different physicians in twenty years, and you told me you might not be able to get just the right one, but you would try." I sent the patient to three different men of expeirence who were interested in the subject, and finally obtained the right physician for her. She had seen, according to her statement, thirty physicians before, and I sent her to three myself before getting the right one. The last one stopped her dyspepsia.

My pair of points refers to the lumbar ganglia, an inch on either side of the navel. If you have so-called chronic appendicitis causing trouble, your right lumbar ganglion will be hypersensitive. If

the trouble is due to irritation from the pelvis, both lumbar ganglia will be hypersensitive on pressure, and you can differentiate between a cirrhotic ovary and a cirrhotic appendix as the disturbing factor. With the latter you have the right lumbar ganglion hypersensitive, and with the other both of them. In cases of adhesions of the gall-bladder chronic cholecystitis, loose kidney, eye-strain—various common causes for disturbance—you will have, as a rule, neither one of the lumbar ganglia hypersensitive. So this pair of points is of extreme value in making a diagnosis in the office.

The importance of the rectum has been overlooked excepting by those who have exaggerated its importance. We have in one city not far from where Dr. Murphy hails, or did have, men who cure everything by the removal of rectal papillæ; everything from appendicitis up to changing the voice of singers. The importance of these rectal papillæ has been exaggerated. When the subject came up I studied it carefully. I examined patients with a view to locating these rectal papillæ, and found they were specially sensitive sense organs. They have a distinct field in the anatomy of a patient, and when the least bit irritated these bundles of nerves cause an immense amount of reflex trouble. They cause spasm of the internal sphincter which grasps them; they become enlarged, hypertrophic, and create great disturbance in some cases.

Now, the point is to distinguish these cases from others, and not deceive ourselves and our patients by taking a wrong view of the situation. Where we find rectal cases in which the papillæ are hypertrophic and sensitive, there may be a great amount of disturbance. A patient with chronic gastritis, chronic intestinal indigestion, and headache may have no end of disturbance from these papillæ; yet we must be careful not to overestimate their importance.

The subject is too large to be handled except in a general way; but those are the points I would make.

Dr. Edwin Ricketts, Cincinnati.—I have been very much interested in one case reported by Dr. Hayd of hour-glass contraction of the stomach. I was impressed with the prompt diagnosis of gastric ulcer, which was so promptly removed with v-shaped incision, and I would like to have Dr. Hayd dwell on that point, that is, how the diagnosis was so readily made after the abdomen was opened.

Dr. Walter B. Dorsett, Saint Louis.—There is one class of cases that we might first consider in Dr. Hayd's paper, and that is the hysterical type of gastric troubles, as well as other lesions. I have a patient now under observation and I will illustrate the point I wish to bring out by describing the case. The patient was operated on for tubal trouble by Dr. Mann; afterward by a gynecologist in Philadelphia, and finally she came to Saint Louis. She is a woman who lives in a hotel. She has a husband, a poodle dog,

but no other family, and she frequently has hysterical sore throat. She has been treated for stomach trouble, heart trouble, rectal trouble, and for other conditions real or imaginary. She came to my house not long ago and woke me up at four o'clock in the morning. I went down and said to her, "What is the trouble?" She said, "I cannot talk; I have lost my voice." I examined her carefully. I brought her to the light, but could not see anything the matter with her throat. I inserted my finger into her throat and she went off talking as soon as I commanded her to do so.

I fear in a good many of these cases that have been relieved by operation the operations have been suggestive, and that many of them that are supposed to have lesions are really hysterical conditions. I draw attention to that fact, for the reason that in considering some of the cases reported by the essayist there may have been an element of hysteria associated with them.

DR. HOWARD W. LONGYEAR, Detroit.—I did not have the privilege of listening to the paper in its entirety, but it seems to me it is apropos and timely. The abdominal and pelvic surgeon is liable to get into a rut by looking chiefly for gross pathological lesions, rather than in getting good histories of his cases and of giving proper prominence to symptoms. He should first be a good internal medicine man. He should have been a general practitioner; that will lead him to look for these things and give them their due prominence.

I recall a case I had which is reported in one of the early books of Dr. Emmet—a case of extreme salivation. The woman was not only in danger of succumbing to this, but she had acquired the morphine habit, because morphine was the only thing that would stop the salivation. She took increasing doses of morphine to relieve this; and she had been doctored by various physicians with absolutely no relief. She would spit up quarts and quarts of saliva daily. I looked her over carefully and found a badly lacerated cervix. I had never heard of a lacerated cervix producing salivation. I told her that this should be repaired anyway, and it might give her relief. Her cervix was repaired and it stopped the whole trouble. It was simply a nervous reflex. Not only was the salivation cured, but before she got out of bed she stopped the morphine habit. I simply mention it as one of the extreme cases of nervous reflex.

DR. RUFUS B. HALL, Cincinnati.—Unfortunately I did not hear all of Dr. Hayd's paper, but what I did hear interested me very much. After all, much depends upon a correct diagnosis, as has been emphasized. I wish to give a brief report of a case which is in contradistinction to the one narrated by Dr. Dorsett.

A woman, thirty-eight years of age, the wife of a farmer, had distressing stomach symptoms. She had been treated for eight years, and finally the husband told me, under the rose, that the doctors had treated her principally as a hysteric subject. She

thought she could not eat anything but patent foods, or, as Dr. Mayo said in his address before the American Medical Association, foodless foods. For six or seven years she weighed only seventy-nine pounds, whereas her former weight was 130. She was the mother of two children, the youngest being seven years of age. I went over the case carefully, and found that she had an enormously dilated stomach; she did not have a tumor in the region of the pylorus to account for this. After questioning her, I felt justified in opening the abdomen. I learned that a year before her stomach symptoms began she vomited several times suddenly and once or twice vomited blood. But not since then. I opened the abdomen and found she had a very narrow opening at the pylorus; I could not pass a lead pencil through the pyloric end of the stomach on account of its narrowness. There was a great deal of cicatricial tissue. I made a posterior gastroenterostomy early in June of this year. I saw the patient less than a week ago and she told me she weighed 134 pounds. Her hysteria was all gone. She eats all that other people eat and is in perfect health.

DR. J. H. CARSTENS, Detroit.—I wish every general practitioner could have listened to this paper and to the discussion. Especially do I wish that the so-called gastroenterologists could have listened to it and taken it all in, because they need enlightenment along this line. I am glad Dr. Dorsett brought up the question of hysteria. I have always maintained that the profession knows less about hysteria than it ought to, and I hope at the next meeting several men will read papers and discuss the question of hysteria. It is a great question. It is not an easy matter to make a diagnosis of real hysteria and pseudohysteria, as is beautifully illustrated by the case reported by Dr. Hall. I have seen cases of dyspepsia over and over again that were due to eye troubles, to astigmatism, eyestrain, and I have cured most of them by having their eyes fitted with proper glasses by some competent oculist. That is another thing the general practitioner forgets—the great influence of eyestrain on the general system, whether it be dyspepsia or something else.

There is another class of cases, like the one related by Dr. Hall, that is more frequent than most of us think; but the trouble does not generally occur in patients of the class he reported, particularly of that age. We have a great many chlorotic girls, and many of them have ulceration of the stomach, which does not manifest itself very markedly. They go on for two or three years, and gradually, in the course of time, their environment improves, or they leave school and do not work so hard mentally, and these ulcers heal. After that the ulcers commence to contract, as all cicatrices do, and finally they have stenosis of the stomach. They ride bicycles; they exert their muscles; their appetite is good; they eat large quantities of food, but the stomach is not able to expel

its contents, and the result is dilatation of the stomach, and that dilatation goes on from one stage to another. With their stomachs in this condition they consult a gastroenterologist, an eminent man in Chicago perhaps, who inflates the stomach and finds it comes away down to the symphysis. He either washes out the stomach or gives a simple remedy. Then, being dissatisfied at not being relieved, they go to another great gastroenterologist in New York, who does the same things, and if these patients have money they will continue to treat them as long as the money lasts. These patients go from one gastroenterologist to another; they are treated by this one and that one for years without a correct diagnosis ever having been made in many of them. These men are treating these patients year in and year out and do not know what is the matter with them. (Applause.) I hold that this is bad practice. It is outrageous.

When a patient is said to have dyspepsia, stomach trouble, or some chronic affection in the abdomen which these gastroenterologists cannot find out and cannot relieve, it is then high time such patients be turned over to the abdominal surgeon, who will open them and be able to tell more in five minutes than all these "stomach doctors" can with their inflations, their electric illuminations of the stomach, and the like. The abdominal surgeon will not only be able to tell what the trouble is, but in nine cases out of ten he can by a small operation relieve them and restore them to health. We get these cases once in awhile, when they have been kept so long by other practitioners that they have no money left and we have to operate on them for glory and love of the race.

DR. JOHN B. MURPHY, Chicago.—I wish to speak of a few points, after congratulating Dr. Hayd on the principles enunciated in his paper and the line of work he has carried out.

There are existing in Chicago a host of quacks, and they exist because we have not done our duty. (Applause.) When a patient comes into a surgeon's office either before or after he has operated, more especially the latter, and still has symptoms, one says to oneself, "Doctor, you did not make the right diagnosis, or you did incomplete work." And we do know, gentlemen, that both occur too often.

Drs. Carstens and Hall have mentioned the diagnosis of hysteria and of neurasthenia. Gentlemen, every time I make a diagnosis of neurasthenia, hysteria, or malaria, I define it myself as equivalent to, "I do not know what is the matter." That is exactly what it means, and when I see one of these vague cases come into my office late in the afternoon of a busy day I say, "I am sorry I cannot see you to-day, I have an engagement," because I know that I am not capable, at that hour, of analyzing a case which deserves the closest and most careful attention. If we are going to continue to satisfy the people, we must relieve them of their *symptoms*, and we must not give their symptoms a

particularly new and pleasing name. We must arrive at the physical cause of the symptoms. That is what Dr. Hayd's paper impresses upon us. We need another class of surgeons, and that is a class of surgeons that can relieve patients symptomatically of what the other surgeon has left uncured or caused. I do not say this sarcastically; I say it because I am painfully aware of the fact that we are neglecting to do certain things. Even in an operation we go in and we do comparatively crude work; we leave exposed areas of peritoneum; the patient returns after a time suffering more from adhesions than from the original trouble. Let me cite one case which impressed me more than any other.

A patient came to me suffering from gastric trouble ten years after a double oöphorectomy. As I could not make a satisfactory diagnosis, though there was great gastroptosis, I made an exploratory laparotomy. I found the pyloric zone of the stomach adherent to the pedicle of the *left* ovary and tube. Think of it, ten years afterward! The operator must have left an exposed pedicle there to have caused that adhesion. That brings us to the point that in the next five years one of the keynotes to our work should be the avoidance of adhesions of the abdominal viscera. We must so operate as to prevent the adhesions and fixations of abdominal viscera which disturb the reflex actions of the entire solar and sympathetic plexuses. (Applause.)

Dr. Joseph Price, Philadelphia.—Dr. Hayd has started the ball rolling, and Dr. Murphy has taken him up on very vital points. It is scarcely necessary to substitute a new class of specialists or surgeons to excuse the reprehensible neglect of the pure clinician. He has always asked too much of us. I am not willing to censure those members of that noble surgical profession who have taken patients, perhaps in the eleventh hour, and relieved them of their pathological burdens; nor am I willing to accept the charge of the clinician as a just one, who says, "I have given you these patients and you turn them back to me in a worse condition than they were before operation." Pepper, that prince of clinical lecturers, said to me once, "You surgeons turn these patients over to us after important operations and ask us to relieve or cure them." Those patients are neurasthenics, hysterics, chronic invalids; they suffer from nervous prostration, so called, and lose anywhere from three to thirty pounds in weight. They come to us from good clinicians. We find actual lesions; we find pathology; we relieve adhesions, and remove the pathology, with good results in some cases, notwithstanding these patients have been told by good clinicians that it was dangerous to attempt it.

Patients have gone to Berlin; they have gone to Vienna; they have traveled over the world receiving large numbers of opinions of that character. I remember a patient from Saint Louis, a woman of great wealth and prominence, who had received the

opinions of several eminent men. She had thirty-five propositions made to her as to what it would cost for surgical intervention. She was also told that operative interference would kill her; that she might die on the table, and ought not to undergo an operation. I told her that she had a trouble which could be easily removed. She said to me, "What about my heart?" I replied, "You see Dr. Pepper and ask him. If he thinks your heart can stand a little ether, I am not afraid to operate on you." She went to Dr. Pepper and he said her heart was all right, that I could go ahead with the operation, which I did, removing a tumor about the size of a cocoanut, and the woman made a nice, happy recovery. Parenthetically, let me say that one of the best lectures I ever heard on the nervous phenomena of the menopause was delivered by Pepper. He once said to me, "You send these patients back suffering from more disturbance of the nervous system and with greater discomfort than they had before we gave them to you." I replied, "Suppose you do send them to us, they are your patients, not ours. They belong to you, and it is our duty to turn them back. You are pure clinicians. You boast of your knowledge of therapeutics. We don't. You have waited until the patient has lost anywhere from thirty to sixty pounds before you refer him to us for operation, and we turn the patients over to you in two or three weeks. Surely, you do not expect them to run a foot race. It is part of your life to improve them. If you can manage the phenomena of the normal menopause, you should manage the phenomena of the artificial menopause or precipitated one." It was that he complained about. I said to him, "If we keep your patients, what happens? You give us no more. You tell us we are dishonorable; that we are irregulars, and you tell your friends not to trust us."

When I graduated I wrote a thesis on hysteria. I said there was no such a thing as hysteria; that it was simply a symptom of disease, and that we ought to find the cause. I have watched the subject with a good deal of interest.

To return to what Dr. Murphy has said. He made the remark that we have not time; that we are too busy to take care of these patients after operation. We must first see to it that our surgical work is good. We must minimize the sequelæ of operative intervention. We must take great care that the recoveries of our patients are as perfect as we can possibly make them. If a general practitioner send a patient to us for operation, it is our duty to send that patient back to him, and it is his duty to pay attention to that patient and not criticise us. A good physician said some time ago that if we take twenty or even sixty young women who are hysterical, who are neurasthenics, disappointed in love, disappointed as school teachers, or who have suffered disappointment of some character, and give them active employment, they would improve in strength and gain ten, thirty-five, or even sixty pounds, and their nervous disturbance or hysteria would vanish. That

is what we accomplish sometimes in taking young nurses without operative intervention of any kind.

A prominent physician was rather anxious about his daughter, who was a neurasthenic. She had been under the care of prominent neurologists nearly all her life. Finally the girl became emaciated, pale, and someone suggested to him that she be sent to a training school for nurses. He replied, "My child is not equal to that." I may say here that had she not been the daughter of a prominent physician she would not have been admitted. There is no nursing school in the country that would have admitted her, but the fact that she was the daughter of a prominent physician was the influence that admitted her. That young woman soon gained fifteen pounds in weight, and she is now able to trip up and down the second and third stories, taking two steps at a time. She is happy in her new profession. Her father ceases to worry about her. This young woman had previously had dilatation performed, curettment, gastroenterostomy, and the suspension of her jejunum. What operative sequelæ she has escaped by taking up that noble profession! I am not criticising the legitimate work of my professional friends and surgical colleagues, but much of that work is being overdone.

Emmet devised an ingenious procedure after recognizing a variety of accidents incident to parturition. He has taught us much about lacerations of the cervix and their repair; and every woman who has ever borne a child has undoubtedly had her cervix notched or possibly deeply lacerated. It remained for Emmet to recognize a deep-seated lesion of the cervix and the pathological conditions following it, which disturbed the comfort and health of women and mothers. He devised an ingenious procedure for its repair; and all of the operations that Sims and his pupils have devised for the repair of accidents incident to parturition have value; it matters not what Mayo or anyone else says of Sims and his pupils. I am sorry that any of them should make criticisms of the great work done at the Woman's Hospital in plastic surgery.

Soon after Emmet devised an operation for the repair of deep-seated lesions of the cervix, ectropion of the lips, erosions, the so-called ulcerations were treated for many years by all sorts of harsh caustics. But he gave us a simple procedure of approximating the lips, restoring the cervix to its normal relations, and repairing the pelvic floor, giving the woman a normal cervix and a good normal birth canal, so that she could bear children comfortably. Now, I never knew a woman whose uterus was in the hollow of the sacrum, with a retroversion or retroflexion, that was comfortable. But after she was relieved of symptoms she was more comfortable. There is nothing, in my judgment, that makes a woman more wretched than a retroverted uterus. There is nothing that makes her more uncomfortable than a fibroid tumor of the uterus, which likewise disturbs very materially her nervous system.

It is our duty as intelligent physicians and diagnosticians to recognize these troubles. Let us cease to talk about hysteria. I look upon it as a positive insult, and if a doctor told me that I was hysterical, I would discharge him and employ another physician. Some of the New York men always shoot over my head. I remember some years ago of noting down a number of cases that were called neurasthenics; they had their eye muscles severed. A man in New York cut an eye muscle every day for three hundred and sixty-five days in the year for reflex disturbances or hysteria. I took some of those patients, which were not relieved by muscle cutting, and found tumors, pus tubes, and other conditions, removed them, and the patients made good recoveries. I made the remark at the time that if other surgeons examined these patients carefully and removed the pathology they had our New York oculist would cease to cut eye muscles. I refer to this as ancient history.

DR. HAYD (closing the discussion).—I am very much obliged to the Fellows of the Association for discussing my paper so generously as they have done. I felt in presenting it that I was dealing with one of the most complicated problems in the whole domain of medicine and surgery—namely, reflex irritations. However, just as soon as we recognize our inability to properly diagnosticate these cases without outside special assistance, just so soon we will have the respect and confidence of the general practitioners. This paper was not written purely in the hope of getting a rap at the internist, but it was rather with the expectation of giving ourselves a deserved shock. It was only yesterday that Dr. Bonifield took me over to his hospital and invited Dr. Carstens, Dorsett, and myself to examine a woman. She was pale, thin, very anemic, a neurasthenic, unfortunate individual, with a scar in the center of her abdomen, a scar on the side, and two scars on the back, and still uncured and suffering. Every one of us have had that picture, and every honest surgeon has met it. It makes him question his work, and, as Dr. Morris has said, in one of his valuable papers, the sooner we focus our observations away from one special organ we will do better work and do more good. Every man in this Association who has not read Dr. Morris's paper ought to do so, because the points he has given in it are going to assist us materially in developing and working out one of these difficult and complicated problems which we call neurasthenia and hysteria.

Every one of the cases I have presented to-day I took from my case book to represent a certain class of work. They were not all seamstresses, because I could have given you the cases of the daughters of millionaires. Dr. Dorsett says that some of these cases were suffering from hysteria. They were not pure hysteria. In every one of them I found pathology. None was operated upon until an eye doctor, a stomach specialist, etc., had been con-

sulted. In Buffalo we have just as good oculists as there are in any other city, but we seldom get two of them to agree. I say this with all due deference to them, as eye problems are also very complex and complicated. In this connection I am going to take issue with my friend and old teacher, Dr. Joseph Price. We have worked together many years, but I believe that errors of refraction or affections of the eye muscles are the cause of more reflex irritations than any other organ I know of in the body. I believe it is possible for men like Gould and Ranney and their followers to do a lot of good, and they have done lots of good in these cases. For instance, let me speak of my own case. I had a reflex dyspepsia; I had my stomach washed out, and several analyses made, without getting relief from any form of treatment. I then went to Ranney, who immediately diagnosticated a latent eye trouble, said I needed glasses, and from the time I put glasses on my dyspepsia was relieved. You may have an oculist in any of the cities in which you live who knows about eye operations, who knows how to fit glasses for the ordinary cases, but he may know little or nothing about muscle insufficiency. I believe, therefore, that Gould is doing good work, and if he keeps on we will have the community educated. But we must not expect that a woman should be well because she has the right glasses; if she has a tender gall-bladder, a lacerated cervix, or a chronic appendicitis, these conditions should be attended to. The eyes of these patients should be thoroughly tested, and if there are errors of refraction they should be corrected by properly fitted glasses; if they cannot get the right glasses from one oculist, they should be sent to another.

In reference to the remark of Dr. Ricketts, I will say that I made a diagnosis of perforating ulcer of the stomach in that case simply from the tenderness and fever. I knew I had a case of localized peritonitis. I assumed it was probably a duodenal ulcer or cancer, as the woman was nearly sixty years of age. I knew it was a case for surgical intervention, and found the condition I have spoken of after opening the abdomen.

Some of us may have smiled at the work of Emmet, and in his book some of the effects of peripheral irritation are recorded. In the two cases of deafness he operated on he attributed the deafness to scars in the cervical laceration. I know most of the men in this Association would have smiled if they were present on the day he presented those two cases, but coming as they did from a careful scientific student, like Emmet, it makes us think. There is no organ that can masquerade so completely the symptoms and pathology of another organ by means of reflex irritation as the stomach.

INTESTINAL OBSTRUCTION DUE TO GALLSTONES, WITH A REPORT OF TWO CASES.

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GALLSTONES may cause obstruction of the bowels directly or indirectly. They do so directly, by plugging or corking the bowel. This form of obstruction, which is the most frequent, may be caused by one large stone or by an aggregation of smaller stones held together by mucus or feces. The term obturation, therefore, best describes the form of obstruction of the bowels most frequently caused by gallstones. Indirectly gallstones may produce intestinal obstruction in five different ways:

(1) By intestinal paresis due to peritonitis.

(2) By the production of volvulus.

(3) By the production of stricture of the bowel.

(4) A stone not sufficient in size to block the intestine o itself may cause contraction of the circular fibers of the gut upon the stone so as to produce complete occlusion; or such a stone may form the nucleus of an enterolith which may produce obstruction. Enteroliths found in this way are, according to Dennis,[1] the "bodies which most frequently cause acute ob struction."

(5) By producing angulation of the bowel.

This classification differs from that of Mayo Robson[2] and others, but is borne out by a study of reported cases, and believed to be better.

Peritonitis having its origin in gallstones and causing par alytic ileus usually originates in the region of the gall-bladder but may originate in any other part of the abdominal cavity occupied by intestine. The infection atrium is caused by trauma of the intestinal wall produced by the stone. Volvulus may be produced by violent peristalsis due to gallstone colic or to the passage of the stone along the intestinal canal.

Stricture of the bowel due to gallstone may be extrinsic or

intrinsic. The former is the more common and is due to peritoneal adhesions. They are most common in the vicinity of the gall-bladder, but have been found in other parts of the abdomen also. The latter are due to cicatricial contraction following ulceration produced by the stone, and are formed in the neighborhood of the gall-bladder. I have been able to find no report of intrinsic stricture of the gut save those due to the ulceration liberating the stone from the bile passages, and therefore in the liver region. However, that such stricture formation may occur in any part of the intestinal tract is more than probable, as ulceration at the site of temporary impaction of the stone in the bowel with subsequent onward movement of the stone has been noted several times. In a case reported by Le Conte[3] that part of the gut in which the stone had first lodged was found to be gangrenous at the time of the operation, although the stone had passed lower down.

The frequency with which enteroliths are formed about gallstone nuclei is probably underestimated. Czerny as quoted by Lobstein[4] "claims that obstruction rarely occurs until the stone has passed into the pelvis and formed there an angulation of the intestine." Reported cases prove this statement entirely too sweeping; however, there can be no question but that angulation is an important factor in gallstone obstruction of the intestine.

In a goodly number of cases two or more causative factors are found, no single one of which is, in itself, sufficient to cause complete obstruction. Gibson[5] who found that four per cent. of all intestinal obstructions were due to gallstones, is probably nearer the actual fact than is Lichtenstern[6] who found 41 cases due to gallstones out of a total of 1,553 cases of obstruction from all causes.

As gallstones are more commonly found in females than in males, so obstruction of the bowel from gallstones is more common in women than in men. It is perhaps as near the fact as we can get at the present time to say that from 75 to 80 per cent. of these patients are women. In 30 cases, in which the sex is given, tabulated for study in preparation of this paper, the proportion of females to males is 4 to 1. It will be noted that the relative frequency of gallstone disease in the two sexes agrees quite closely with the relative frequency of gallstone obstruction of the bowel in the two sexes, that is, in each, four or five females are affected to one male.

Brinton puts the average age at 53.5 years, Wood[7] at 59.85 years. This practically agrees with an average made from all cases thus far reported. In my own data, above referred to, the average age is 60.32 in 28 cases. That most of these patients are past middle age is accounted for by two facts, (1) that it takes a long time, probably years, for a gallstone sufficiently large to produce intestinal occlusion, to form, and (2) that cholesterin is more abundant in the blood of elderly people. In the vast majority of cases the stone producing the obstruction enters the bowel by way of an opening formed by ulceration between the gall-bladder and duodenum. Passage of stones by ulceration from the gall-bladder into the colon is not uncommon, but stones passing this way seldom produce symptoms of obstruction because of the large caliber of the colon. Rarely they ulcerate through the gall-bladder into the stomach,[8] less rarely into the jejunum.

That stones sufficiently large to produce obstruction of the bowel may pass through the common duct is unquestionable, Da Costa and others to the contrary notwithstanding. Moynihan[9] cites two such cases. I have on two occasions removed stones, as large as the ones found in two cases herewith reported, from the common duct near the duodenum. That these stones may have grown by accretion after their lodgment in the common duct is true, but they demonstrate the fact, however, that the common duct may dilate sufficiently to lodge a stone large enough to cause occlusion of the bowel. Rokitansky and Tyson both say that stones the size of a hen's egg may pass through the common duct.

The small intestine gradually grows narrower as it approaches its junction with the cecum, which accounts for the fact that gallstones producing obstruction are most often found lodged in the ileum, and usually in its lower portion, although they may lodge in any portion of the intestine below the opening of the common duct. A relatively large number have been found in the ileocecal opening.

Tupper [10] and Meisel (quoted by Moynihan) each record a case in which the stone was found between the opening of the common duct and the pylorus. Several have been found in the sigmoid flexure. Naunyn[11], quoted by Wood, reports a case in which the stone obstructed the bowel immediately above the sphincter ani. Mikulicz[12] (quoted by Moynihan) saw a case in which the duodenum was obstructed by pressure of gallstones lying in a diver-

ticulum of the cystic duct. Treves's statement, therefore, that the obstruction is always in the small intestine is now known to be incorrect. I have been able to find but one case in which the point of entrance into the bowel was given wherein the obstruction was the large bowel. This is a case reported by Smith[13]. The stone entered the colon and lodged in the sigmoid. It is extremely probable that in all cases in which the large bowel is obstructed by a gallstone, the stone enters the colon. For it is extremely unlikely that a stone which passes through the small intestine would produce obstruction in the large. It should be remembered, however, that such a stone might, after entering the large bowel, become the nucleus of an enterolith which might produce occlusion. The size of the stones causing obstruction varies. Small stones have caused fatal obstruction and large ones have been passed without symptoms. Often the obstruction is due to a clumping of small stones. This was the condition found in fifteen of the ninety-two cases collected by Lobstein in his paper above referred to.

Conditions Produced by Lodgment of Gallstone in the Bowel.—In the majority of cases operated upon, no serious damage to the intestine or mesentery is found. Le Conte, Bircher[14] and Scott[15] all report cases in which resection of the bowel was necessary. because of gangrene. Kinnier (Mayo Robson) reported a case in which gangrene of the gut and mesentery was found post mortem three days after enterotomy had been done for the removal of a large stone. Relatively speaking, this is a large number of cases of gangrene and emphasizes the necessity of early operation. Douglas[16] says that the stone may form for itself a diverticulum after which the symptoms of obstruction may pass. He thinks this is a rare incident. Personally I can find no such case reported.

Perforation is not uncommon in fatal cases, but the gut is usually found in good condition in cases operated upon promptly. Peritoneal adhesions also are seldom seen except in the less acute cases wherein symptoms have existed for some time.

Symptoms and Signs.—Previous symptoms of gallstones were given in 17 of Lobstein's 92 cases. An examination of the reports of 43 cases shows that in 17 there was a previous history of gallstone disease, in 3 it was stated that there had been no such symptoms, and in the remaining 20 this point is not referred to. Douglas, Hemmeter,[17] Mayo Robson and Moynihan are in accord in the opinion that in the majority of cases there is

history of previous gallstone disease, hence I am inclined to the opinion that Wood is incorrect in the statement, in his paper above referred to, that a history of previous attacks of gallstone disease is wanting in the majority of cases. A tumor was felt in 6 of the 43 cases analyzed by me. In one [19] a tumor was felt in the umbilical region, in one[20] in the right hypochondrium, in one[21] a mass was felt per rectum, and in two[22] [23] there was found a tumor in the right iliac region. Wising found a tumor noted in 5 of 51 cases collected by him. In a case reported by Elsner[18] there was a tumor at the pylorus. After fifteen months, symptoms of bowel obstruction appeared suddenly, when the pyloric tumor was found to have disappeared. Later a tumor of the upper abdomen appeared. Eight days later a large stone was passed per anus and recovery followed. Fitz, quoted by Hemmeter, found a tumor in 5 of the 23 cases compiled by him, one in the right iliac, two in the umbilical, one in the left inguinal region, and in one it was found by rectal examination.

The symptoms vary considerably with the variations in the exact character and location of the obstruction. Generally speaking there are the well-known symptoms of the obstruction of the bowel, either acute, subacute or chronic. In the majority of cases the symptoms may be said to border on the subacute variety rather than the hyperacute. The higher in the alimentary tract the obstruction occurs the more severe are the symptoms as a rule.

The pain is colicky and paroxysmal, less severe than in cases of volvulus and invagination except in those rare instances in which strangulation occurs in connection with the obstruction. The obstruction is quite frequently not complete. Often some gas is passed and in rare instances some feces. In a few cases diarrhea has been present. Vomiting is perhaps the most prominent symptom and becomes fecal if the obstruction persists. The abdomen is usually soft, and tympany is absent or but slightly marked in most cases. Tenderness and rigidity are not present unless there be peritonitis, hence their presence indicates that the obstruction is paratic in character, due to peritonitis, or that ulceration, volvulus or gangrene complicates the case. Shock is usually present at first, but not severe as a rule, although it may be, especially if the obstruction is high up. The symptoms may disappear permanently, or they may disappear for a time and then return.

The stone may be passed per anus without the patient's

knowledge, or it may lodge in the large bowel and produce no symptoms for years. A longe period of time may elapse (ten years in my own case) between the gallstone symptoms *per se* and the symptoms caused by the presence of the stone in the bowel. The stone may remain in the bowel for weeks or months without producing symptoms. It is probable that the entrance of the stone into the intestine is often not announced by symptoms.

Maclagan (quoted by Moynihan) records a case in which there were four distinct attacks of obstruction of the bowel followed by the passage per anus of four large gallstones. Two or more attacks of obstruction do not always mean two or more stones, though perhaps they usually do so. One stone may cause several attacks.

An exact diagnosis is not essential, and in the majority of cases cannot be made without an exploratory incision. In many cases, however, it would seem possible to arrive at a correct diagnosis prior to operation. A previous history of gallstone disease is significant, and while there may be no such Ihstory in many cases, it will be possible by careful inquiry to get a history of "stomach trouble" in the majority, and this so-called "stomach trouble" is usually in reality gallstone disease. it will be remembered that in most of these cases the gallstone producing the obstruction enters the bowel from the gall-bladder by ulceration and hence it is that in the majority there is no history of jaundice. If the history of gallstone disease included a tumor in the gall-bladder region which is not present when the symptoms of obstruction appear, or which, at this time, is found to have migrated, the diagnosis of gallstone obstruction may be made with certainty. A migrating tumor, even in the absenca of previous symptoms of gallstone trouble, is of diagnostic value, and if the tumor be characteristic in size, shape and consistence (the size of a small egg, oval and hard), is sufficient to basey diagnosis upon. The obstruction, too, being often less than complete, may aid in making a diagnosis. Repeated attacks of bowel obstruction are more common in this than in any other form of obstruction, and are therefore significant when present. There is perhaps no form of bowel obstruction in which there is so little tenderness and tympany as in that caused by gallstones.

The pulse and temperature are usually slightly, if at all, disturbed. In cases seen before the shock passes the pulse will be accelerated and the temperature may be slightly depressed,

while later on the pulse may be accelerated and the temperature elevated owing to the supervention of peritonitis. To recapitulate, the points of especial diagnostic import are:

1. A previous history of gallstone disease, often called by the patient "stomach trouble."

2. Incompleteness of the obstruction.

3. Relative absence of tenderness, tympany, rigidity, and fever symptoms, especially early in the history of the case.

4. Persistent and frequent vomiting.

5. Tumor in the gall-bladder region preceding the symptoms of obstruction, but not present with them.

6. A migratory tumor, especially if it appears first in the gall-bladder region.

7. A tumor, even though stationary, of characteristic size, shape and consistency (*vide supra*).

After all is said and done it remains true that the best way to make an exact diagnosis in bowel obstruction, of any kind, is, in many cases, yes in the majority, by opening the belly. Because this fact is not generally accepted and acted upon, many unnecessary deaths have occurred and they will continue to occur until it is accepted and acted upon, hence no apology is made for this slight digression.

Prognosis.—That many cases of obstruction of the bowel by gallstones recover through passage of the stones *per vias naturales* is true, and it is a pity. A pity, because of the delay in operation which the knowledge of this fact has caused has resulted in the loss of more lives than have been saved by the passage of the stone.

Notwithstanding the spontaneous recoveries and those due to operation the mortality remains high. Mayo Robson says that 52 per cent. of all cases treated medically die and that surgery has not as yet shown a much greater percentage of recoveries. Treves says that 65 per cent. of all cases will die if not relieved surgically. Fitz (quoted by Hemmeter) says that of twelve cases treated medically eight recovered, and of eleven treated surgically but two recovered. This quotation from Fitz is a striking example of the fallaciousness of facts and figures when taken without a grain of salt. It is more than probable that all of the eleven cases cited by Fitz as having been treated surgically, had been treated medically until surgical interference was thought to be the only hope. It is equally probable that the two that recovered after operation would have died

had they not been operated upon. In my own collection of cases there are eleven that were operated in which the time of operation was given. Five of the eleven died, and six recovered. The average duration of the obstruction prior to operation in the fatal cases was six and one-fifth days, and in those that recovered three and one-half days.

Treatment.—It seems strange that there should be any material difference of opinion as to the best plan of treatment to adopt in the malady under discussion, and stranger still that this difference should be found to exist among surgeons, but it is nevertheless true.

Sands[24] questions the propriety of early operation in acute intestinal obstruction. Maylard,[25] speaking of obstruction by gallstones, says "treatment should in the first place consist of purely conservative measures." He advises large enemas and massage under chloroform to be followed by administration of belladonna and opium; "should these measures fail to give relief," he says, "the question of delay, or the immediate performance of enterotomy, has to be considered."

Douglas [26] says "efforts should be made to dislodge the stone by high enemata and judicious massage. Should these fail, enterotomy should be resorted to without delay." Hemmeter[27] also advises delay in operating. Waring[28] advises medical and palliative treatment in the early stages of the obstruction. Without prolonging the discussion by further quotations of this kind I submit that as long as such advice is followed, so long will the high mortality which now obtains from this malady continue. Rolleston, although an internist, hits the nail squarely on the head when he says,[29] speaking of gallstone obstruction, "as the symptoms are those of intestinal obstruction and it is seldom possible to make a certain diagnosis of mechanical obstruction of the intestine by gallstone, the safest course is to open the abdomen and remove the stone by incising the bowel."

I fully agree with Mayo Robson when he says "that the surgeon who waits beyond the period when an operation may be undertaken with every hope of success is incurring a very serious responsibility." I believe that nine-tenths of the surgeons of wide experience in this class of work will endorse Moynihan[30] when he says "operations performed during the first three days [illegible] probably have a mortality little, if at all, in excess of 10 [illegible]nt." Personally I believe that the mortality could be re-

duced to 5 per cent. if operation were done as soon as the diagnosis of intestinal obstruction was made.

Reports of Cases.—The reports of two hitherto unpublished cases are appended. That of Case I was kindly furnished me by Dr. R. E. Brokaw of Portland, Ind., in whose practice it occurred; that of Case II, by Dr. S. D. Beavers of Decatur, Ind., by whose courtesy I was called to operate.

CASE I.—"Mrs. Josephine B., æt. 44, mother of ten healthy children. A large woman, weighing 185 pounds. Always had good health and was a hard worker. About seven years before her death had severe paroxysms of pain in epigastrium. Had several paroxysms lasting from a few hours to two or three days during the next three years, one very severe attack a few weeks prior to childbirth. During last two or three years of her life

Fig. 1.—Stone Found in Case I, Natural Size.

she had several severe attacks of pain and took morphine by hypodermic injection for relief. Her last sickness began about two weeks before her death—a very severe and prolonged attack, the pain becoming less until two days before her death, when the pains in the abdomen were severe, accompanied by vomiting and inability to move bowels. Death occurred October 27, 1905, from obstruction of the bowels, Autopsy revealed obstruction of the bowel about six inches above ileocecal juncture caused by impaction of large egg-shaped calculus; gall-bladder obliterated and replaced by adhesions to intestine which was fragile and easily torn. My opinion is that at the beginning of her last sickness, two weeks before death, this stone ulcerated through gall-bladder into intestine-duodenum." (See Fig. 1.)

CASE II.—"Mrs. C. G., 55 years of age, of German birth and

mother of three grown daughters, was always healthy until October, 1894, when I was hastily summoned to see her, and found her cramping and vomiting. Her stomach was very tender, liver enlarged, and in region of gall-bladder was a tumor the size of a man's fist. Gave morphine hypodermically and all pain stopped within a few hours. I advised operation, but as there was no further trouble and she and her husband were opposed to operating, my advice was not followed, and I saw nothing of her again until March 20, 1905, when she came to my office for relief of "stomach trouble." Upon examination the stomach was found to be very tender, and the gall-bladder region was so excessively tender I could not tell whether the former tumor existed or not. March 24 I was called again to see the patient and found her suffering from cramps in the

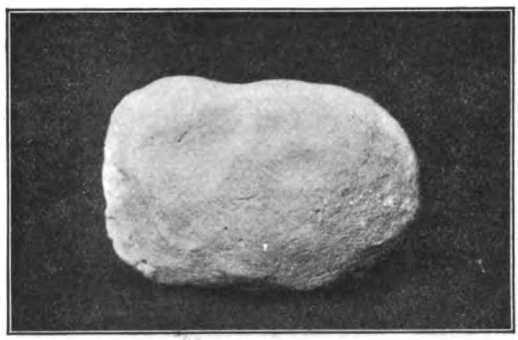

Fig. 2.—Cast of Stone Found in Case II, Natural Size.

stomach and region of the gall-bladder, but I was unable to discover former tumor although able to manipulate the parts freely. I again quieted cramps with the hypodermic. I now saw her at frequent intervals until June 24, 1905, when I was called and found her vomiting, with a history of no movement of the bowels for two days, stomach tender and slightly tympanitic. Her bowels were soft and not tender. Muscles of the abdomen relaxed. I ordered enemas repeated every four to six hours until bowels moved, and gave morphine hypodermically, which quieted her.

June 25, I found that her bowels had not moved. I then ordered Rochelle salts, a heaping teaspoonful in hot water every two hours, but the salts only made her vomit. The stomach was now considerably distended by gas, abdominal muscles

were rigid, and indications of obstruction of the bowels seemed unmistakable. I therefore advised operation, but the family objected. Next morning at 3 A.M. I again saw the patient and insisted upon an operation, to which they now consented. Called Dr. Porter of Fort Wayne, Ind., and Dr. Boyers of Decatur, Ind.

Dr. Porter operated at 9.30 A.M. and found a gallstone lodged in the ileum. The stone was about the size of a small hen's egg. The patient made a very rapid recovery and in sixty days was doing general housework and was helping her husband about the farm.

The operation consisted of an enterotomy through a mid-line incision in the abdomen and was done at the patient's home, with the assistance of Doctors Beavers and Boyers. The stone was found to be tightly held by the bowel and was removed through an incision parallel with the long axis of the gut, while the escape of bowel contents was prevented by the fingers of the assistant. The opening in the bowel was closed by a through-and-through running stitch of catgut over which was placed a row of Lembert stitches of fine linen, the bowel was then cleansed and returned to the abdomen and the wound closed in the usual way without drainage. Not being permitted to keep the stone I made a cast of it, from a photograph of which the illustration (Fig. 2) was ma le.

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DISCUSSION.

DR. A. M. VANCE, Louisville.—I have seen two similar cases; I did not diagnosticate either one of them; neither had any surgery, and both got well. I was called by a fellow practitioner to see one of them. I found a woman, fifty years of age, in the last degree of extreme emaciation. In going over the history I learned she had vomited every morning a large quantity of fluid for over a year. She had complained, during that time, of great pain in the abdomen, which had shifted in the last few days to the lower abdomen. She was absolutely out of range of surgical interference then, and my idea was that she had pyloric cancer. I advised palliative treatment, and also high enemata, hoping there would be some relief of the lower bowel and as a consequence relief from pain. Judging from the history given there was some impaction, because she had had no evacuations recently. I thought I had an absolutely hopeless case. Three days later the physician called me up and said, "I want you to come and see Mrs. ——, as I think she is going to die." As the doctor's office was only three or four doors from me, I made the mistake of going direct to the house. I rang the bell; the husband answered it, and in an excited manner threw up his hands and exclaimed, "She is saved, saved!" I was taken into the room where there was a vessel full of feces, and in the center of it there was a foreign body which looked like a big Irish potato. It proved to be a gallstone, three inches long and an inch and a half in diameter. She recovered.

I was called to see the next case by Dr. Wilson of Louisville, the patient being a woman, fifty-five years of age. She was taken sick with what seemed to be appendicitis. At any rate, Dr. Wilson so diagnosticated it. She had been vomiting all day. By the way, in neither of these cases was the abdomen distended, and that puzzled me a little, particularly in the last case. I examined the region of the right iliac fossa, found considerable

tenderness, and thought she had appendicitis. There was no particular fever present. I manipulated the abdomen a little, and in a short time she said it was all right. She passed a gallstone as large as a ping pong ball, which I dislodged by manipulation.

DR. HUGO O. PANTZER, Indianapolis.—Bearing upon the subject of a differential etiological diagnosis, possibly suggesting another cause of intestinal obstruction associated with gallstones than the causes mentioned in the paper, I wish to report briefly the case of a woman fifty years of age. She had been the subject of gallstone disease in early adult life, having had many attacks in the course of ten years. Later these ceased. When seen by me she had recently had recurrent attacks of partial obstruction of the intestines. The site, in the right hypochondrium, was invariably the same. In this feature the history departs from the ordinary case of obstruction associated with gallstones, wherein the locality differs, varying with the different point in the intestine to which the gallstone has migrated, when the obstructive symptoms appear. The separate attacks commonly are owing to a spastic contraction of the intestine at the site of the stone. This class of cases ordinarily yields to large doses of belladonna or atropia.

In my patient the pain, tumefaction, and intestinal turmoil had invariably pertained to the region of the upper ascending colon and first portion of the transverse colon. To make a long story short, the operation disclosed the gall-bladder adherent to the transverse colon. The separation of these organs showed a gallstone in actual transit from the gall-bladder to the colon, the opening in both organs having a sharply defined margin, as if made with a punch. It was during the time of nature's efforts to establish adhesion and communication between the gall-bladder and colon that these attacks of obstruction occurred. Presumably there was, for the time, tenderness at this site, which induced spasm, whenever bowel contents attempted to pass. Passage of the gallstones resulted only after strenuous efforts of the upper proximal bowel had been kept up for days, and probably aided by the external applications and the exhibition of opiates. I removed six or eight large gallstones from the bladder, sutured the openings in the bladder and the bowel, and the patient made a good and permanent recovery.

DR. MILES F. PORTER, Fort Wayne.—I would like to ask Dr. Vance on what evidence he bases his conclusion that the stone he fished out in the case he reported was a gallstone?

DR. VANCE.—It had all the appearances of a gallstone, and showed every indication of it from scraping. Dr. Cartledge took possession of the stone, so that I did not have a chance to analyze it critically.

DR. PORTER.—The reason I asked the question was that it is very essential for us to determine whether they are enteroliths or

gallstones, and we ought to make sure of it by a careful examination.

The production of obstruction, as cited in the case referred to by Dr. Pantzer, is one of the methods mentioned in the paper by which obstruction may be produced, that is, reflex spastic contraction.

SOME POINTS IN THE DIAGNOSIS AND TREATMENT OF ACCIDENTAL HEMORRHAGE.

BY

ADAM H. WRIGHT, M.D.

Toronto.

ACCIDENTAL hemorrhage is one of the most complex subjects in obstetrics, and one of the causes of its complexity is the word hemorrhage. In medicine and surgery we consider certain hemorrhages, such, for instance, as one in the brain or pancreas, dangerous because of the resulting clots which act as foreign bodies, and by irritating pressure, produce serious effects. In obstetrics most practitioners consider that the serious condition in all forms of what is technically known as accidental hemorrhage is loss of blood.

My aim in this paper is to refer simply to certain points ni connection with accidental hemorrhage without any attempt to treat the subject in a complete or systematic manner. In a paper on the concealed variety read at the meeting of the British Medical Association last month, I reported a case of the concealed form. I may say that four cases of concealed accidental hemorrhage have come under my observation.

As these cases are exceedingly rare, I take the liberty of repeating one report of great interest, because I had the opportunity of watching the patient carefully from the onset of the serious symptoms until the time of her complete recovery.

Patient, aged 29, II-para, when seven months advanced in pregnancy was suddenly seized with abdominal pain while driving. Went home (only a short distance) as soon as possible. Went upstairs intending to go to bed, collapsed while undressing. I saw her in about twenty minutes and found her cold and weak, pale, with rapid pulse, and suffering intensely from "tearing" pains over the abdomen. Gave her large doses of morphine and ordinary treatment for shock. The symptoms, although very alarming for about two hours, subsided. Concealed hemorrhage suspected at first, but doubted on following day. Four days afterward an uneventful labor resulted in the expulsion of a dead fetus. The placenta showed

evidence of being nearly half detached. The shock was evidently due to the tearing pains caused by the sudden impingement on the uterine wall, and not at all to the loss of blood, which did not amount to more than a pint (I think less than a pint). The clot thus produced, although comparatively small, had acted as a foreign body, and produced a surgical traumatism which nearly caused the death of thc patient.

In considering the whole subject of accidental hemorrhage, several differences of opinion are prevalent, both as to diagnosis and treatment. The following procedures are conspicuous in this regard,—rupture of the membranes, plugging the vagina, accouchement forcé, and Cesarean section. In this paper vaginal Cesarean section will not be considered as a variety of accouchement forcé. Why is there so much divergence of opinion? In the first place, probably because the internal concealed variety is absolutely different from the external hemorrhage as to symptoms and results, and requires entirely different treatment.

Again, all accidental hemorrhages are at first internal and concealed, and present a great variety of symptoms, such variety depending on the suddenness of the outpour, the amount of blood poured out, and the length of time of concealment. The blood poured out from the ruptured vessels may flow freely from the uterus at once, or may be bottled up for a varying time.

In a certain proportion of cases of accidental hemorrhage there is little or no shock, because there is little or no obstruction to the flow of blood. The important condition here is loss of blood resulting in collapse, with no tearing or agonizing pains.

What is shock? We have no time now to discuss such an important subject in detail, but we recognize the fact that the surgeons of to-day are giving us valuable instruction as to this condition. Obstetricians have said much about shock as produced by accidental hemorrhage during the last sixty years. Many of their statements have been rather vague, but they generally indicate that shock, in connection with accidental hemorrhage, is a condition produced by loss of blood. It will simplify the matter somewhat from the standpoint of this paper to leave out of the question what is known as post-operative shock. I shall, however, give a definite meaning to the two words, shock and collapse, although it will be ad-

mitted that any distinction between these two conditions must be to a certain extent artificial.

Shock will be considered a condition which is produced more or less suddenly by a serious traumatism, or surgical injury, similar, for instance, to that produced by the wheel of a railroad car passing over and crushing a limb.

Collapse will be considered a condition caused by extreme exhaustion, especially that induced by severe hemorrhage, and depending on the amount of blood lost. It is, of course, difficult in many cases to differentiate between these two conditions. It may be that we have shock from traumatism and collapse from hemorrhage to an equal degree in certain cases of concealed hemorrhage.

In the majority of cases of concealed hemorrhage, however, shock and not loss of blood is probably the prominent symptom or condition. The muscle of the uterine wall is generally strong enough to resist the impact of the *new body* without appreciably stretching, while the nerves suffer from the sudden pressure to such an extent that a severe storm arises, causing agonizing pain, intense shock, and tetanic spasm of the uterine musculature, with a cervix "as hard as iron."

There is another entirely different class of cases where the uterine wall is not strong enough to offer much resistance, and as a consequence the uterine cavity enlarges greatly, allowing an escape of blood from the uterine vessels sufficient to destroy life. I have not seen, nor have I met a physician who has seen such distention of the uterus, but we must accept the evidence of such careful observers as Oldham of Guy's Hospital, and others who have recorded such cases.

It should not be difficult to recognize such a condition because the patient would steadily grow worse, the abdomen would become enlarged, the temperature would be lowered, but the pulse rate would grow more rapid.

Diagnosis.—No attempt will be made to deal fully with the important subject of diagnosis. We may consider that, in many cases of the concealed, combined internal and external, and the ordinary external varieties, diagnosis is often difficult or impossible for a time at least. The diagnosis of the concealed form is often impossible until after delivery.

In my paper of last month I referred to a very admirable discussion on accidental hemorrhage at the meeting of the

British Medical Association two years ago. I can hardly agree, however, with the opinions there expressed respecting the diagnosis of the concealed form.

Sir Arthur McCann expressed the opinion that in many cases the diagnosis is impossible until after the expulsion of the placenta; but he adds: "However, once the symptoms of anemia are well marked, and are accompanied with much pain and tension or localized swelling, there is usually not much trouble about the diagnosis."

Jellett, who expresses the latest views from Dublin, tells us the symptoms of concealed hemorrhage fall under two heads: (1) "Those due to loss of blood;" (2) "those due to the accumulation of blood in the uterus." He adds that "the most prominent symptom in the second grade consists in the gradual enlargement of the uterus." Similar views are generally entertained in the United States and Canada. Whitridge Williams tells us,—"The appearance of acute anemia with manifestations of shock in a patient in the latter months of pregnancy should always suggest the concealed uterine hemorrhage."

While it must be admitted that acute anemia and uterine distention are sometimes present, it seems certain that in a case such as I have described, there is no acute anemia or marked distention of the uterus. Therefore, these two symptoms to which so much prominence is given by many, if not by most authors, should receive less consideration in such cases.

What, then, are the symptoms of concealed accidental hemorrhage? They are probably in the majority of cases pain and shock. Pain generally comes on suddenly—so suddenly sometimes that it resembles the "solar-plexus punch" that "knocks out" the prize fighter. The pain is so entirely different from the ordinary labor pain that the patient and her friends generally realize that something serious has happened. The pain is continuous instead of being intermittent, amounts to extreme agony, and is accompanied by tetanic contraction of the uterine walls, including both body and neck. These symptoms should lead us to suspect that concealed hemorrhage is the possible or probable cause of the patient's condition.

Of course, one may be mistaken, as the following case will show: Mrs. A., aged 25, II-para. In the eighth month of pregnancy was suddenly seized with extreme continuous pain, accompanied with tetanic uterine contraction, July 24, of this

year. When I saw the patient I suspected concealed accidental hemorrhage. Morphine was injected and the woman was at once sent to a private hospital, where she received a second dose of morphine and suitable treatment for shock. On the following day there was some local tenderness over the abdomen, with slight elevation of temperature, and catarrhal appendicitis was then suspected. In addition to the administration of morphine, the patient received calomel and castor oil, and recovered in about eight days (no signs of labor appearing in the meantime), and was sent home. On the last day of August labor commenced. She returned to the private hospital and, after a somewhat tedious labor, a healthy child was born September 1. The patient made a good recovery. Careful examination of the placenta revealed no trace of "old clot."

Although one may make a mistake in diagnosis in such cases, the prompt and appropriate treatment of pain and shock, or in other words, the treatment of symptoms according to the methods of many able obstetricians of fifty or sixty years ago appears to be correct.

Treatment.—In the paper on the concealed variety, reference was made to Goodell's extremely valuable and interesting paper on the same subject. This distinguished obstetrician described in a very graphic way the symptoms, but he did not, in my opinion, properly differentiate between shock from traumatism and collapse from loss of blood; and, as a consequence, his advice in such cases, "to deliver the woman as soon as possible," impelled men to carry out very radical forms of delivery with disastrous results.

The following is a synopsis of the treatment I have recommended when traumatic shock is the chief factor.

1. Administer morphine by hypodermic injection: one-half grain at once, one quarter grain in half an hour after, and another quarter after another half hour, or less, if required; *i.e.*, one grain within an hour. Atropine may be given as well, if thought advisable.

2. Lower the patient's head and elevate the foot of the bed.

3. Keep up the body temperature by the external application of artificial heat.

4. Give a high enema of salt solution. Subcutaneous or intravenous injections may sometimes be advisable.

5. Give small doses of strychnine (not more than two doses, of one-thirtieth of a grain each, by hypodermic injection).

The latter recommendation is given with some confidence, notwithstanding the adverse views of certain surgeons. I believe at the same time that large doses of this medicine are exceedingly dangerous in certain cases of either shock or collapse.

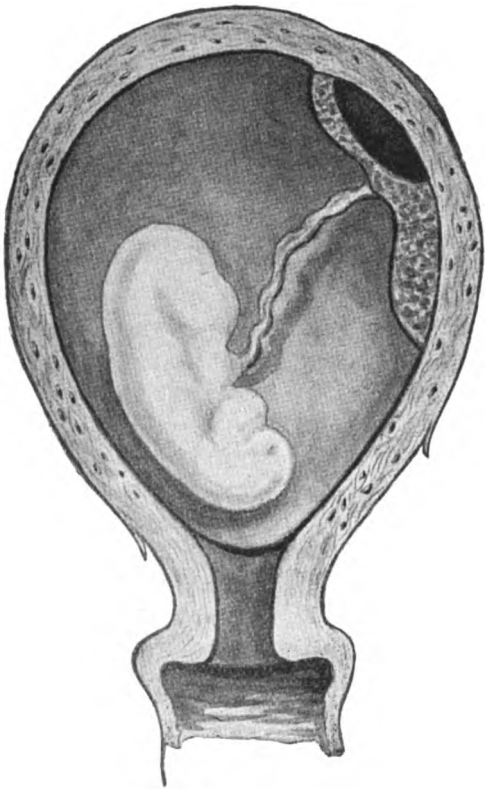

Fig. 1.—Pregnant uterus, seven months, membranes intact, uterine wall tetanically contracted cervix "hard as iron," showing a post-placental clot between a portion of the placenta and the uterine wall.

In the discussion which followed the reading of my paper at the Toronto meeting, it was stated, "that the same results could be obtained in many different ways. In Dublin the practice was to plug the vagina; in Edinburgh to rupture the membranes."

I had no opportunity to reply, but I desire now to call attention to the fact that in one of the cases reported (which is also reported to-day), the clot resulting from the outpour of blood,

was entirely post-placental, the whole margin of the placenta being adherent to the uterine wall (Fig. 1). Neither the vaginal plug nor the puncture of the membranes could in this case mitigate the serious symptoms of pain and shock.

The combined internal and external accidental hemorrhage, whether occurring before or during labor, is more easily diagnosed than the purely concealed form; but in certain cases, the diagnosis is sufficiently difficult to cause much perplexity. When, for instance, a quart of blood is retained internally, and only two ounces escape externally, we have a condition closely similar to the concealed variety, with intense pain and shock. Under such circumstances it seems reasonable to suppose that the pain and shock are still the prominent symptoms, and should receive very prompt treatment. After complete or partial recovery from pain and shock it would seem well to carry out

Fig. 2.—Placenta from Fig. 1, after delivery, showing on the maternal surface the saucer-shaped cavity occupied by the clot.

the so-called Dublin treatment to which further reference will be made, or perform a vaginal Cesarean section. A report of a case with similar conditions and symptoms will be given later.

In what is known as the external accidental hemorrhage, there is little or no shock, but there may be collapse from loss of blood. It is probably in such cases that the greatest difference of opinion prevails, especially as to two procedures, rupture of the membranes, and the introduction of the vaginal tampon

The puncture of the membranes and the use of the plug are very old procedures in the treatment of accidental hemorrhage.

We are told that one hundred and thirty years ago there was a great difference of opinion on this question, and at that time Leroux of Dijon was a strong advocate of "rupture of the membranes," and the "administration of ergot of rye to check the flooding."

The discussion as to these two methods during the first and second thirds of the last century were interesting, and were equal in many respects, and perhaps better in some respects, than the discussions of the last forty years. It would appear from the discussion last month in Toronto that we have not made much progress in a century and a half as to the proper estimate of these two procedures. There can be little or no doubt, however, that each method is good in its proper place.

All things considered, the vaginal plug appears to be more generally useful, and safer, for the various kinds of accidental hemorrhage than any other procedure. And yet, a candidate at a final examination, who expressed such an opinion before a board of examiners in London, England, ten years ago, would probably have been plucked because of such dangerous heterodoxy. That terrible danger of converting an external into an internal hemorrhage was ever present for many years in the minds of the orthodox.

About twenty-five years ago, Speigelberg and Smyly reintroduced the use of the plug, and England and Scotland were for a time horrified. The results at the Rotunda have been so remarkably good that the whole world has been forced to modify its opinions respecting the procedure. No one pretends, however, that such introduction of a plug is always safe; but it is understood that the proper application of an abdominal binder greatly minimizes the dangers.

It is difficult to understand, at the same time, how plugging could accomplish much good in concealed accidental hemorrhage, although we are told that in three cases of this form of hemorrhage occurring at the Rotunda, a plug was used with good effect. I do not know how the diagnosis was reached in these cases, nor when the plug was introduced; but I should suppose that such introduction would be absurd while the patient was suffering, perhaps dying, from shock.

If I should again meet a case similar to that which I have reported in which severe pains came on four days before the onset of labor, I should now be inclined to interfere after the patient had rallied, say on the day after the advent of the acute

symptoms. After such a severe nerve storm as I have described, with its prolonged condition of uterine tetanic spasm, a fetus is, so far as I know, always dead.

Although I believe that the statement made by Goodell, that in such cases the rule should be imperative "to deliver the woman as soon as possible," has done a large amount of harm, by encouraging the operation of accouchement forcé, even while the cervix is "as hard as iron," yet I believe that the patient can hardly be considered safe until the uterus is emptied. I think, therefore, when all symptoms of shock have disappeared, it might be well to introduce a bougie into the uterus, according to the Krause method (being careful not to rupture the membranes), and at the same time introduce a plug into the vagina. This can be done best by using some form of Sims's speculum, introducing a gum elastic or rubber bougie, about 12, English size, as far as possible, and packing the vault of the vagina with antiseptic gauze. I prefer 5 per cent. iodoform gauze.

It seems remarkable that rupture of the membranes in cases of accidental hemorrhage should have had so many advocates during the last one hundred and fifty years. While one of the oldest, it is one of the crudest, and one of the most objectionable obstetrical operations when performed before the onset of labor. There is no doubt, however, that the procedure is an excellent one in its proper place, but its scope as compared with that of the introduction of the vaginal plug is much more restricted. In the case of concealed accidental hemorrhage before the onset of labor, and especially before the effacement of the cervical canal, it is, I think, never justifiable. In the case of the combined internal and external accidental hemorrhage before labor, one cannot speak so positively, but it seems probable that in such cases the operation is unjustifiable. If, however, labor has commenced and the external hemorrhage is serious, the rupture of the membranes will frequently, or perhaps generally, produce a good result by diminishing or frequently stopping the flooding. The puncture of the membranes may produce good results even if done before the onset of labor if there is effacement of the cervical canal. I have not however, had sufficient experience with this procedure to give a definite opinion in that regard.

It would not be profitable to spend much time discussing accouchement forcé. Its mortality rate, when the patient is suffering from shock, and the uterus is tetanically contracted is,

in my opinion, exactly 100 per cent. I know of no operation in obstetrics or surgery respecting which one can speak more definitely. A certain amount of force may, however, be used when the os is dilatable. For instance, we may have ruptured the membranes before the os is dilated; there may still be considerable hemorrhage, making an early emptying of the uterus desirable. In such a case manual dilatation of the os, with version, or forceps delivery, may be advisable. It is doubtful, however, whether the manual dilatation, under such circumstances, should be designated accouchement forcé.

I should like to discuss the operation of vaginal or abdominal Cesarean section, but I have had no experience in connection with either operation for accidental hemorrhage. In the case of either concealed, or combined internal and external accidental hemorrhage, with the patient suffering from shock and a cervix as "hard as iron," any operation would probably be unjustifiable. The shock should be properly treated; and if, in spite of such treatment, the symptoms of shock grow worse instead of better, the patient is probably going to die. If, on the other hand, the patient recovers from the shock, it s certain that in some cases, if not in the majority, serious operation is not advisable. It might happen, however, that internal hemorrhage was taking place into a uterus whose walls were stretching rapidly, and the loss of blood was the chief factor. If, in such an emergency, it was not possible to dilate the os, and deliver soon enough to save life, some form of Cesarean section might be deemed advisable. Some form of vaginal section seems the best radical operation in sight; but I am inclined to think its field is exceedingly limited. It seems to me entirely unsuited for such a case as I have reported today, especially when there is doubt as to the diagnosis; but it may be indicated in cases where labor is imminent, or present, especially where loss of blood, whether internally or externally, or both, is the serious factor.

I shall now submit to the Fellows of the Association a case reported something like ninety years ago: "A lady of a weakly constitution and delicate habit, was attacked in the latter months of pregnancy with a slight discharge of blood from the vagina, not amounting altogether to half an ounce, accompanied with alarming symptoms of exhaustion and debility. The os uteri was scarcely dilated to the size of a sixpence, and was in such a state of rigidity as precluded the possibility

of affording any manual assistance. The lady in consequence died, and, on examination after death, it was found that the separation of the center of the placenta from the parietes of the uterus had taken place, whilst its edges were completely adherent, forming a kind of cul-de-sac into which blood had been poured, to the amount of a pint and a half, which had become coagulated within the cavity thus formed."

What would you do in such a case as this? Did this woman die from shock, or from loss of blood, or from a combination of the two? I have never met a case where the loss of a pint and a half of blood without other complication caused death; but I must admit that such a hemorrhage is a serious matter. I think, however, that the rigidity of the os was due to that peculiar nerve storm which is present in such cases, and that the patient died from shock. Under such circumstances, my chief aim would be to first treat the shock as indicated. As to operative procedures I should like to get your opinion.

The main points of this paper are as follows:

1. Making a diagnosis in many cases of concealed accidental hemorrhage is generally difficult, sometimes impossible, before delivery.

2. The so-called important symptoms—anemia and distention of the uterus—are not present in a large proportion of such cases.

3. The serious condition in most cases is shock from traumatism, and not collapse from loss of blood.

4. The diagnosis of the combined internal and external accidental hemorrhage is more readily made, but the amount and effect of the blood within the uterus are often difficult to ascertain.

5. Even in such cases shock from traumatism is sometimes the predominating element; on the other hand, collapse from loss of blood, whether retained within the uterus or flowing externally, is sometimes the important factor.

6. In all cases where shock from traumatism is the main condition, or the predominating element, the most urgent requirement is proper treatment of such shock, and not emptying the uterus.

7. In a large proportion of cases of the combined internal and external hemorrhage, the introduction of the vaginal plug, with the application of an abdominal binder, appears to be a very safe and effectual plan of treatment.

8. In a small proportion of cases, especially during labor, puncture of the membranes is beneficial.

9. Any form of accouchement forcé, which includes forcible dilatation of a rigid cervix is never justifiable.

10. The best operative procedure would appear to be some form of vaginal section; but its field is limited, and not accurately defined.

DISCUSSION.

DR. MILES F. PORTER, Fort Wayne.—With reference to the amount of hemorrhage, I will say that the effect of a given hemorrhage depends principally upon two points, and in Dr. Wright's case they are well-nigh equal. First, the quantity of blood lost, and second, the time in which it is lost. You doubtless recall the old experiment in the physiological laboratory of suddenly removing the blood from the ventricles and thus producing death of the animal. Large quantities may be removed gradually without serious symptoms. I believe Dr. Wright's patient died of hemorrhage, and I would suggest that such patients be given normal salt solution by intravenous transfusion after the hemorrhage is checked.

DR. OSCAR H. ELBRECHT.—Dr. Wright did not make it clear in his paper as to what caused the placental detachment. As I understand it, there was hemorrhage from the detachment of the placenta.

DR. WRIGHT.—I do not know what the cause is in the majority of cases.

DR. ELBRECHT.—In one case you say a pint and a half of blood was lost. Did you deliver that woman at once?

DR. WRIGHT.—No, I treated her for four days; the membranes did not rutpure until labor came on.

DR. ELBRECHT.—These women deliver themselves spontaneously, usually, inside of two weeks if the hemorrhage has not been sufficient to demand immediate delivery, and the latter is the proper method if the hemorrhage threatens life and it can be traced to the uterus. I would like also to ask Dr. Wright if the fetus was macerated?

DR. WRIGHT.—It was hardly macerated; it was discolored.

DR. ELBRECHT.—Your second case I should say was one for immediate delivery, either by the Dührssen's vaginal Cesarean section or accouchement forcé, or by the Bozzi. The puncture method is an old one and perhaps the only one to determine whether there is a copious intrauterine hemorrhage or not, for it discharges the amniotic fluid and the membranes collapse, thus

allowing the hemorrhage to escape from the cervix, and this usually makes the diagnosis. There is usually no oozing from the cervix, and when we have pronounced symptoms of hemorrhage or shock, it is the only radical way to determine it before choosing the method of delivery.

I have seen one case of intrauterine hemorrhage that was copious, and know of two cases of placental detachment in which the women delivered themselves after sufficient time had elapsed to complete the detachment and thus cause the death of the child. I can also cite one case reported by Dr. E. W. Saunders of Saint Louis in which a placental abscess occurred, which was thought to be due to a small placental hemorrhage that became infected. This, however, is rare pathology and not the usual termination of such cases.

DR. SIGMAR STARK, Cincinnati.—I would like to relate the history of a case I saw in consultation with Dr. Poole last winter. The patient was taken with severe abdominal pain. The doctor got there about three o'clock, and in an hour's time he was enabled to make a diagnosis of accidental hemorrhage. The woman grew progressively worse, and at six o'clock he sent for me. At the time of my arrival I found her abdomen enormously distended, about as largely distended as could be possible under any circumstances, and I readily concurred with him in the diagnosis of concealed hemorrhage. The woman was blanched to an extreme degree; she was practically pulseless. The heart beats ranged from 160 to 170. We determined, on account of the grave condition of affairs, and believing there was hemorrhage going on, to induce labor. Accordingly, the woman was anesthetized; manual dilatation of the os was proceeded with, but labor did not set in until after marked dilatation of the os had been effected, which was a somewhat tedious performance. It took from half to three-quarters of an hour to dilate the os. Having ruptured the membranes, forceps were applied and the child delivered. In fifteen minutes the woman died.

I want to say here that this woman had been having a child about every two years, so that the soft parts were easily dilatable for the delivery of the child, and after the os had been sufficiently dilated there was no great difficulty in completing delivery.

Here we have an instance where a woman was brought to an extreme degree of exsanguination within a short time from concealed hemorrhage. The interesting point in this case is the etiological factor in the production of the concealed hemorrhage. Before taken with pain in her abdomen, she experienced a severe tumultuous movement on part of the child. These movements continued for some minutes, then subsided, and from that time on she felt no further fetal movement. When we examined the cord we found it contained a firm knot, so that in all likelihood the accidental hemorrhage in this instance was brought about by the fetus slipping through a loop in its cord, producing knotting

of the cord, which brought about asphyxiation of the child, inducing violent movements, which resulted in tearing away the placenta from the uterus. I do not believe it makes much difference whether we puncture the membranes or not in these cases. I do not think puncturing of the membranes will do any good. The principle is to remove the child from the uterine cavity as quickly as possible, whether we do it by vaginal section or by means of manual dilatation.

DR. WALTER B. DORSETT, Saint Louis.—It seems to me we ought to consider the causes of the detachment of the placenta, why it becomes detached from the uterus. First, there may be an abnormally short cord, or a cord around the neck of the child. Second, there may be some pathological condition of the placenta itself. Again, there may be syphilitic condition of the placenta, or inflammatory changes in it.

As to the treatment, we have no time to puncture and wait, but all our measures should be life-saving, packing tightly the vagina with the idea that we are going to control hemorrhage by compression of the uterine arteries, tamponing alongside the neck of the uterus to stop bleeding, and if the loss of blood or shock is great, we should resort to intravenous saline solution. I treated with success two such cases along those lines, allowing nature to come in and deliver the women in a natural way.

DR. E. GUSTAV ZINKE, Cincinnati.—I am free to confess some disappointment in the presentation of this subject by the essayist. I looked for a paper which would give us some definite information as to conducting such cases. I am surprised that a gentleman, who has just issued a textbook on obstetrics, should come here and ask us our opinion.

The treatment of accidental hemorrhage is of greater importance than its pathology. What are we to do when we are confronted with a woman apparently dying of accidental uterine hemorrhage concealed or open? We all know that it is one of the most serious complications that we encounter. There ought to be no doubt as to what we are to do on the instant. The first thing that enters our mind is: the uterus must be emptied. If this cannot be promptly and quickly done by the Harris or Edgar method, other more reliable methods must be resorted to. Balloon dilatation does not come into consideration here. The Harris or the Edgar method may be considered if the cervix is soft and dilatable. If the os or cervix does not permit of rapid dilatation, both methods imply a waste of valuable time, and the woman may die before the operation is completed. If the accident occurs when the child is viable, near or at term, deep cervical incisions, vaginal, or abdominal hysterotomy will give the best result to both lives concerned, provided the operator is experienced, has the necessary assistance, and the surroundings are as nearly ideal as can be secured. If there is evidence of obstruction from any cause in the parturient tract, I would not hesitate

to select the abdominal route, even under circumstances not the most favorable.

In the case described by Dr. Wright abdominal Cesarean section was indicated, in my opinion. With a cervix of the kind described, rigid as iron, and as thick as represented, one cannot make room enough to deliver the child at the period of viability. He who has any experience with operative obstetrics can make a vaginal or an abdominal hysterotomy in thirty minutes, and have the woman back in bed. The best and the only way to arrest hemorrhage in these cases is to empty the uterus and secure contraction. There should be no doubt about this.

DR. WRIGHT (closing the discussion).—I obtained what I asked for in part at least. The last speaker (Dr. Zinke) has given me information that I wanted on this subject. If there is one thing that I should like to check in this country it is the wave of accouchement forcé that went over it a few years ago. Dr. Goodell wrote one of the most magnificent papers I have ever seen on this subject. He described the symptoms clearly from a series of collected cases, but he seemed to be confused as to the difference between shock and hemorrhage. So far as I have been able to form any opinion, I should say that, if surgical intervention be considered advisable, vaginal Cesarean section is the best operation in such cases; but I am not prepared to give any definite rules as to when it should be done.

DIFFUSE SUPPURATIVE PERITONITIS.*

BY
JOHN B. MURPHY, M.D.
Chicago.

DISCUSSION.

DR. JAMES F. W. ROSS, Toronto.—Observing by the program that Dr. Murphy was to present this interesting subject, I took occasion to go over my work and prepare for this meeting a synopsis of cases, together with an endeavor to ascertain the results.

Permit me to compliment Dr. Murphy on his excellent work, as well as on his able presentation of the subject. My work has been carried along somewhat different lines, and I cannot show the brilliant results that he has given, but still my results have materially improved. I have a list of sixty-two cases of diffuse general peritonitis. The first part of the record is rather appalling.

The following are the results in sixty-two operations in which diffuse purulent peritonitis was found:

Case-Book No.		*Pathological Condition.*	*Result.*
38	Mrs. P. (Carveth)	Gonorrheal	Died.
52	Garrett	Sepsis from miscarriage	Died.
66	London	Sepsis from extrauterine pregnancy	Died.
70	Moss	Sepsis from extrauterine pregnancy	Recovered.
102	White	Ulcer of duodenum; perforation; starvation	Died.
103	Urquhart	Gonorrheal peritonitis	Recovered.
112	Medway	Perforated appendix	Died.
115	Hitchman	Ruptured pus tube	Died.
121	Todd	Perforated appendix	Died.
147	Middleton	Perforated appendix	Died.
166	Barnes	Perforated ulcer of duodenum	Recovered.
194	Ditner	Perforated appendix	Died.
214	Farnen	Perforated appendix	Died.
265	Stedman	Ruptured pus tube	Died.
267	Holman	Sepsis following labor	Died.
277	McFadden	Attempted abortion	Died.
286	Maddison	Perforated appendix	Died.
373	McCully	Gangrene of intestine	Died.
374	Grove	Following dilatation of uterus	Died.
376	Yelland	Perforated appendix.	
496	Roblin	Perforated appendix	Died.

*NOTE.—Dr. Murphy failed to furnish a copy of his paper for publication.

Case-Book No.		*Pathological Condition.*	*Result.*
497	Northcote	Ruptured pus tube	Died.
595	Farar	Perforated appendix	Died.
602	Hopkins	Perforated appendix	Died.
632	Dunn	Perforated appendix	Died.
649	Cane	Gangrene of intestine	Died.
680	Hall	Perforated cecum	Died.
697	Mills[1]	Perforated appendix	Died.
713	Devitt	Perforated appendix	Died.
738	Johns	Perforated appendix	Recovered.
762	Dunnington	Perforated appendix	Died.
827	Adams	Perforated appendix	Recovered.
874	Barth	Perforated appendix	Recovered.
912	Farar	Perforated appendix	Died.
1021	Holdcroft	Perforated appendix	Recovered.
1032	Tustin	Perforated appendix	Recovered.
1042	Cowan	Perforated cecum	Recovered.
1033	Magwood	Perforated appendix	Died.
1051	Hobbs	Perforated appendix	Recovered.
1051½	Hopkins	Perforated appendix	Recovered.
1126	Cockburn	Perforated appendix	Recovered.
1161	May	Attempted abortion	Died.
1179	Eager	Perforated appendix	Recovered.
1191	Wilson	Perforated appendix	Recovered.
1210	B——s	Perforated appendix	Died.
1230	Meservey	Perforated appendix	Died.
1261	Illing	Perforated appendix	Recovered.
1266	Forrester	Perforated appendix	Recovered.
1267	Finkle	Perforated appendix	Died.
1280	Coste	Perforated appendix	Died.
1293	Sweetman	Perforated appendix	Died.
1317	Buck	Perforated appendix	Recovered.
1322	Trewin	Perforated appendix	Died.
1369	Chestnut	Perforated appendix	Recovered.
1409	Rowell	Ruptured pus tube	Recovered.
1422	Thomas	Perforated appendix	Recovered.
1435	McCullough	Perforated appendix	Recovered.
1443	Thompson	Ruptured pus tube	Recovered.
1464	Hutcheson	Perforated appendix	Recovered.
1465		Perforated gastric ulcer	Died.
1480	Jones	Perforated appendix	Recovered.
	Hearn	Perforated appendix	Recovered.

SYNOPSIS.

	Recovered.	Died
Perforation of appendix	19	22
Perforation of cecum	1	1
Gangrene of intestine (internal strangulation)		2
Perforation of duodenal ulcer	1	1
Perforation of gastric ulcer		1
Following labor		1
Following miscarriage		1
Attempted abortion		2
Sepsis from ruptured ectopic gestation	1	1
Gonorrheal	1	1
Ruptured pyosalpinx	2	3
Following dilatation of virgin uterus		1
Total	25	37

[1]Anesthetic given by doctor who afterwards lost his life in the same way.

In discussing this very interesting subject I would be ashamed to present such an appalling record were it not for the redeeming feature shown in the very gratifying results of the last thirty cases. If we compare the first thirty cases operated on with the last thirty, we find as follows:

First series of 30, 26 deaths; 4 recoveries.

Last series of 30, 10 deaths; 20 recoveries.

To what is this striking difference due? There are two factors: (1) Improved technic; (2) earlier interference.

(1) In my earlier cases I washed out, as I thought, thoroughly with gallons of sterile salt solution, but I found that with the intestines in the abdomen there was a great deal of handling and rubbing, and I considered that this was a mistake. Finding that removal of the intestines, when necessary in looking for an intestinal obstruction, was not accompanied by shock, so long as the endothelial cells were kept bathed by warm saline solution and the bowels were not allowed to become chilled, I decided to eviscerate patients suffering from diffuse purulent peritonitis. When the contents are removed the abdomen can be more thoroughly washed, as can the eviscerated contents, and there is less interference with nature's protecting lymph blocking up the lymphatic stomata. Two streams can be kept running from two douche receptacles, one cleansing the five abdominal pouches (post-splenic- post-hepatic, two iliac and pelvic), and the other cleansing the extra-abdominal viscera.

No matter what the pulse is I go on until thoroughly satisfied, and then return the viscera and close the wound. I use no posture for the patient, and no drain for the peritoneal cavity. Why? My results speak for themselves. A house surgeon asked me a question that influenced me regarding drainage. I had operated on case 1369, and put a drain into each loin from behind. She recovered, but within twenty-four to thirty-six hours there was no drainage. He said: "What is the object of trying to drain these cases—it seems that drainage ceases in such a short time." I have not drained since except in the case of 1465, when the patient was practically dying from the effects of the hydrochloric acid that had been escaping from a large perforation of the stomach for hours before I saw him, and the operation was only undertaken at his request. Even in the case No. 1443 (ruptured pus tube) no drainage of any kind was used, and the wounds were completely closed. The wounds often begin to open even with buried silk sutures applied in layers, but when they open even down to the intestines themselves there is no drainage of fluid. I have also used frequent injections of saline solution under the breasts and hourly enemata of the same solution injected well up into the rectum, with how much benefit I cannot say. Perhaps, after a time, this latter may be again discarded. It does seem, however, as if the salt solution had some effect. Unfortunately, I have not as yet had the blood or urine tested to

determine the presence or absence of any definite changes in their solid constituents. We have not a physiological chemist appointed on any of our Toronto hospital staffs. It is for such experimental work that we need him.

(2) Earlier Interference.—We are now better able to diagnosticate diffuse purulent peritonitis than we were a few years ago. The general practitioner calls in the surgeon much earlier and we are allowed by the public to do about as we advise. Formerly it was, "Oh, we will wait until to-morrow"; now it is, "Why not attend to this at once?" The public has been educated, the profession has been and is being educated, and our work is facilitated. We hope the time may arrive when there will be very few cases of diffuse purulent peritonitis from appendiceal disease; the surgical treatment of the disease—the safest treatment—will be carried out before that awful fatal perforation of a pus filled or gangrenous organ takes place.

In my list twenty-two died, nineteen recovered only after a terrible struggle, and every one of these might have been saved by early operation. And then, in this list, those cases of perforation without diffuse purulent peritonitis that lost their lives from profound sepsis are not included. We see from scanning the list that perforation of the appendix caused diffuse purulent peritonitis in forty-one cases, and that there were only twenty cases from all the other causes combined.

One of the most unfortunate cases dealt with was No. 374. A young woman had submitted to a dilatation of the uterus for the relief of dysmenorrhea. Pain set in, and when I saw her she was very much distended and in a desperate condition. Notwithstanding what I thought at that time to be a thorough washing and drainage, she succumbed. A large incision is essential.

Dr. Miles F. Porter, Fort Wayne.—I do not think I ever beat Dr. Murphy in but one thing, and I did so in this, that I had the pleasure of reporting a case of general purulent peritonitis cured by operation before Dr. Murphy did. I remember very distinctly when he and Dr. Deaver said at Atlantic City, six years ago, that all of these cases of general purulent peritonitis died. I am glad to know that Dr. Murphy does not believe so now.

There is one point I wish to make, namely, it is wrong to suppose that every man with a perforating gastric ulcer, operated within a few hours or a short time after the perforation, has been cured of general purulent peritonitis. It is not a case of general purulent peritonitis; the patient has not had time to develop general purulent peritonitis. He is prevented from having general peritonitis and has gotten well.

I believe in everything that Dr. Murphy has said regarding the elements of treatment, and one thing in particular I have a great deal of faith in and that is speedy work and not too much of it. Dr. Ross spoke of a better technic. I think there is a better word than that—namely, simpler technic. Let the pus out, and let

the patient alone, and he will get well. They have been getting well for the last eleven years, and they were cases of general purulent peritonitis then as now. A great advantage, I think, is the Fowler position. Another great advantage, I also think, is the continuous rectal injection of water, very, very slowly; but the most important point of all, in my estimation, is that you let the pus out, and let the patient alone. The man who takes out the appendix in all of his cases will lose a patient, now and then, who might be saved by leaving in the appendix and doing nothing more than putting in a drain.

DR. JOSEPH PRICE, Philadelphia.—Dr. Murphy's presentation of this subject is most scientific and pleasing, and he has left very little ground for discussion. His methods of relief of pressure, molecular death, and pus foci are simple, in that he avoids just those conditions which we know kill. They are purely pathological.

What Dr. Murphy said in regard to the Fowler position is true. Dr. Brown told us this morning that peritonitis in the upper or non-germ zones kills, notwithstanding the patients are placed in the Fowler position. They die in good numbers, and they have died all over the world in good numbers of peritonitis in the upper germless zones. You know perfectly well that if you starve a patient for nine hours, after washing out his stomach, you have the stomach and duodenum free from germs. It seems that no matter what we do for some of these cases of general purulent peritonitis, whether we make a wet or dry toilet, they die. We know perfectly well that they die in large numbers, and they die in spite of what Dr. Porter has said. You have no more beautiful illustration of that fact than the whole first series of Dr. Ross, with or without surgery. If nothing is done, why should they recover in Dr. Porter's hands, and why should they have died in Ross's hands? According to such reasoning Dr. Ross simply murdered his cases by his conscientious effort to save them.

Speaking of sponge holders, I do not own one. I do not own a sponge forceps, and it is a rare thing, except in the pelvis, that I use a little piece of gauze to determine something or other in the pelvic basin. And that is about all. I never rake up lesions or the general peritoneal cavity with gauze, nor do I make a storehouse of the peritoneal cavity for cheesecloth, and then pull out enough of it to cover one of the tobacco beds of Kentucky. I have been over this ground heretofore very thoroughly, and I want to say that Dr. Murphy's pathology is simply admirable. But he, like others, would make advanced steps if he discarded serum, which I regard as worthless. We as a profession know no more about serum therapy than a Chinaman does about teaching Sunday school.

David Barrow, in a series of five or six cases of consecutive stab wounds, saved all of the patients. He saved their lives by toilets

and drainages. The surgeon who preceded Dr. Brown at the Saint Louis Hospital did wonderful work along these lines, although I do not remember the nature of his toilets. He made toilets; he did good surgery; he drained, and the patients got well in large numbers. Fortunately, some of the series of cases were reported to this Association.

Dr. Murphy has told us that he has accomplished his excellent results by doing as little surgery as possible, and draining these patients with one or two or three drainage tubes. Very few of us have done any more or, perhaps, as much. I think the man who obtains good results in these cases is the one who goes just as far as the pathology extends, and no farther. I believe that when I dilute or remove the toxins and the pus foci, and all the factors which predispose to pus foci, when I arrest that infection I save my patient. If I arrest the infection I do so with some form of drainage precisely as Dr. Murphy arrests it with one or two or three drains, and I believe with the open method of treatment that I practice, without stitching, that my patient is safer than the patient of Dr. Murphy with stitches and with three rubber or glass tubes. I have removed blood clots and débris, whatever may be present, and we know that these septic fluids usually kill rapidly. We know that such patients die in large numbers unless they are promptly treated. If I find in these cases six or eight inches of ileum coiled up like a serpent, which is elevated jointly, and considerable débris beneath and over it, I cleanse it and drain the surface.

In conclusion, let my say that I do not offer this as a criticism of the wonderful work of Dr. Murphy, but I want him to continue in this work, so that he will be able to report sixty cases of general suppurative peritonitis without a death, and I will run him the closest race I know how. He has stimulated me to do cleaner and better work by coming here and making this discussion.

Dr. John Young Brown, Saint Louis.—The paper presented by Dr. Murphy is the most logical and convincing argument on this subject that I have heard in any medical society. Up to the time he reported his two thousand cases of appendicitis, I had used practically all of the methods for the treatment of general peritonitis. My mortality was high in the character of cases under discussion. Since the publication of his admirable paper, I have used the method he advocates here to-day. In a series of fourteen operations for diffuse peritonitis, the result of perforating appendicitis, I have had thirteen recoveries. These cases have been carefully selected from a large series of appendicitis operations, and in all of them here referred to the pathological condition present was undoubtedly general.

Two weeks before I left home to attend this meeting I had a case of this character. The patient, a minister, was brought into the hospital at eleven o'clock at night. His condition was des-

perate. I opened his abdomen, found a perforated appendix, absolutely no walling off, and pus flowed as soon as the peritoneum was opened. The pelvis was filled with pus. The operation was completed in eleven minutes. A glass drain was placed in the pelvis, and the saline solution was allowed to trickle into his rectum. He has made a nice recovery. The cases above alluded to were of a similar nature. I wish to emphasize the point made by Dr. Murphy that the saline should be allowed to trickle slowly into the rectum, and should be kept at a proper temperature. It is wonderful how much salt solution a patient so treated will absorb.

Another point which the essayist has alluded to and which I think is of great importance is the time of operation. These cases should be given little anesthetic, and the work should be completed as quickly as possible. The treatment advocated by Dr. Murphy is a long step in advance, and if carried out as its author has described it will result in greatly lowering the terrific mortality we have hitherto had in such cases.

DR. JAMES F. BALDWIN, Columbus.—I would like to ask Dr. Murphy some questions which he can answer in closing the discussion.

First, with reference to the cases that have gone on longer than those he has reported, in which there is a general purulent peritonitis, with perhaps the formation of such adhesions that there may be thirty or forty different pockets of pus here and there—does he include such as these in his thirty-odd uniform recoveries?

Second, we have general suppurative peritonitis sometimes following puncture of the uterus in cases of abortion; these may go on for a week or more without very much treatment, so that one pus cavity after another is formed. In my own work I have found that such cases uniformly terminate fatally, and I do not see how I can save them by any treatment.

Third, how long is it advisable to keep drainage in, since nature apparently, in a few hours, may produce adhesions around the drainage tube?

DR. MURPHY, in closing the discussion, said: I wish to thank the Fellows for the liberal discussion they have given my paper. With reference to the questions asked by Dr. Baldwin, I would say that I included every case of perforative diffuse suppurative peritonitis that came under my charge—good, bad, and indifferent—in that period of time. I have not had just the type of cases which Dr. Baldwin has mentioned, and if I did have I would not include them under this head, because in the type of case he described there are multiple foci of infections, circumscribed by adhesions, which is not the case in general diffuse suppurative peritonitis.

In the time limit allotted for the reading of papers I failed to

mention other facts in connection with the cases reported in the paper, namely, the number of reoperations I have had to perform. I reoperated on four cases, opening abscesses on the other side and in the renal region. Just why that should be I do not know definitely, but when we have a general suppurative peritonitis from the appendix, perforating on the under side of the great sacroiliac symphysis, which runs from the left side of the second lumbar vertebra to the right side, the pus appears in the pelvis or on the left side primarily; a secondary abscess may circumscribe itself in the left side, and we have little or no trouble with it by simple drainage. I had to reoperate on three cases for intestinal obstruction which resulted from adhesions. In one case (in the country) the intestinal obstruction came on after the patient had been operated on a month. That patient died, and I did not include the case in the list of deaths from general suppurative peritonitis; it does not belong there more than if he died from a strangulated hernia a month later. In these cases an extensive operation should not be done, neither should the tissues or viscera be handled. If we go over the statistics of St. Thomas's Hospital, London, we will find that Dudgeon and Sargent collected 119 consecutive operations for general peritonitis, of which 100 were operated on and irrigated, with 80 per cent. mortality; 19 were operated on without irrigation, with 47 per cent. mortality. What a contrast! In the same hospital, and under practically the same type of treatment, except the irrigation.

Time is a precious element in treating these cases, as I have so frequently mentioned in this organization. If we have a patient who has a suppurating wound and the pus is retained under the dressings for one day we may not have an eczema; but if it be retained under the dressings for two or three days there will be an eczema, until finally the whole surface is excoriated. That is just what takes place in the peritoneum, and it is the keynote of the situation. I believe if a patient comes into the hospital moribund, with projectile vomiting, merely opening his abdomen would kill him, because that man is dead practically on admission. He has received his fatal dose of toxins into his circulation, just the same as if it were a fatal dose of atrophia or strychnia from the stomach, and is going to die whether we drain the abdomen or wash out the stomach. What we should do, however, is to prevent that man from getting that fatal dose of sepsis into his blood, and we can do that uniformly if we adopt a timely and conservative method of managing these cases, that is, getting into the abdomen quickly, finding the intestinal opening, closing it, and getting out quickly. Remember, you must close the opening.

Some years ago I collected and reported nineteen operations for duodenal ulcer in which the surgeons simply drained the abdomen. Eighteen of the patients died almost immediately, while one died some weeks later, which means a mortality of 100 per cent. What is the reason for this high mortality? They failed to close the

opening. In a slightly smaller number, with closure of the opening, they almost all recovered. In a typhoid ulcer we have exactly the same proposition confronting us, and we should always close up the leaking point to prevent additional sepsis. No man can additional abrasions. The upper abdomen is the favorite zone for absorption. This we find is the danger zone in gunshot wounds. It is rich in its vascular and nerve supply, with rapid absorption.

When we have a perforation near the ileocecal valve we have virulent microorganisms; we always have the *Bacillus coli communis* in a virulent condition in a portion of the tract if admitted into the peritoneum without a preparatory infection. If we inject, for instance, the *Staphylococcus albus* into the peritoneum of a rabbit, and in ten to twenty-four hours a pure culture of the colon bacillus be injected into the same peritoneum, the animal gets well uniformly because he has had an infiltration of the peritoneum and his absorption is stopped, and because his peritoneum has been primed to lymphocytosis to deal with the infection after that time. But if we inject colon bacilli into the peritoneum of such animals alone, or simultaneously with the staphylococci, every one of the rabbits will die. Whether that is a local or constitutional immunity that is produced, I do not know. I believe it is a combination of both.

I am sure that Dr. Price did not mean to say that none of the sera has any effect. For instance, we know the effect of serum in diphtheria. I am not sure that the serum has an effect in cases of general peritonitis when it is used in conjunction with other measures of treatment. I would like to dispense with it, but I cannot afford to drop one link in a chain giving such good results. We know positively that by the *Staphylococcus albus* the virulence of the colon bacillus can be completely destroyed.

One of the members has inquired about the method of proctoclysis. An ordinary vaginal douche tip should be used, with three openings, so that the water can flow into one and the intestinal gas come out of the other. If we use a single opening tip, gas will not bubble back into the can, and the passing of gas is important, otherwise the fluid will be expelled in the bed when the patient attempts to pass the gas. The elevation of the can should be from four to six inches above the anal level. The nurse must be instructed to watch the patient closely and not allow any more than one pint and a half of the saline solution to flow in forty minutes to one hour. The tube can be strapped permanently to the leg of the patient with adhesive plaster, the fountain syringe being at the head of the bed, and a hot water bag used to keep the solution warm. Every two hours the nurse pours in hot saline water. There is no irritation of the rectum. The patient may go to sleep and sleep while the irrigation is being carried on, as the tube is not taken out for days. It is merely ab-

sorption of the fluid by the bowel. The speed of flow must not be controlled by a forcep in the tube, but by the elevation of the can.

DR. VANCE.—Do you think all of the water goes into the bowel and into the circulation?

DR. MURPHY.—I know it disappears uniformly and regularly in all cases, and for days at a time without rejection, and while I do not know exactly where it goes, I yet feel that it is all absorbed, as the large intestine is the great "dryer" of the intestinal tract.

DR. BULLITT.—How long are the abdominal drains kept in?

DR. MURPHY.—I keep the tubes in until there is a cessation of the discharge, but that varies very much in different patients. Sometimes the discharge may continue for a week; it depends very largely upon the virulence of the infection. Sometimes after appendicitis peritonitis, when we drain we have no discharge. Again, we may have an offensive discharge that continues for days and days, profuse in the early part of the case, when the dressings are saturated hourly, and often for days with this offensive material.

Through the drain the tension of the pus is kept low. These patients have increased urination and increased perspiration from the saline solution when the blood pressure is restored. We give them nothing by the mouth. They are not thirsty.

DR. WATHEN.—What serum do you use?

DR. MURPHY.—Streptolytic serum. I do not know anything about the theory on which it acts; the results are all that can possibly be expected.

From what I have said, I do not want you to call it my treatment. If I have added anything, it is in pointing out the importance of *time* in treating these cases, *closing* the hole, and *not doing too much handling, drainage,* and blood washing by proctoclysis. I did my work as carefully in the abdomen up to the time I made my previous report on the other cases in 1902 as I do now, but the patients died. Now, they do not die. I believe this is not due to a change in the *virulence* or *type* of infection; these are the same practically as they always have been, and always will be, when the infection comes from the intestinal tract. No, the change in results is due to the timely intervention and type of treatment.

THE ABUSE OF PURGATIVES.

BY

EDWIN WALKER, M.D.,

Evansville.

NOTWITHSTANDING the great strides the science of medicine has made in the last half century, entirely revolutionizing our views of pathology, we still cling to many of the vagaries of our fathers. It is true that great changes have been made in our therapeutics, and many gross errors have been abandoned; but there still remains in our recent text-books much that should have been long since expunged as harmful or valueless. We should at least break away from measures productive of harm.

We have replaced emetics with the stomach tube and sudorifics by the use of dry heat and baths, and so on through the line, until the reliance on drugs in every division is less, or is replaced by a better remedy.

Less change has been made in the employment of cathartics than in any other department of therapeutics. We do not use them as heroically, it is true; fewer "are purged out of the world," but they still occupy the foreground of our armamentarium. A friend, who enjoys a large practice, in reply to my strictures against purgatives, says: "I could not practise medicine without purgatives." In fact, the very name of our profession emphasizes their use, for we practise "medicine" or "physic," which certainly encourages the laity in their belief that our chief reliance is in drugs and that "physic" means the "usual purge" his family doctor gives him, as a preliminary, in all his ills.

I wish we could find a better name, for we do not practise "medicine" to-day. The use of drugs has now and probably always will have an important place, but it is not our chief reliance, and as our knowledge advances, it will be of less importance. The laity should be educated to the idea that the prime object in consulting a physician is to obtain a diagnosis and to receive such directions of a mode of life as will best

combat their trouble, and that the exhibition of drugs is of small importance compared to this.

A large proportion, and one might safely say, a majority of patients who consult their family physicians, get a dose of purgative medicine to begin with. The doctors give it because they are "bilious," or to "unlock the secretions"—whatever that may mean—or to "act on the liver," although we know but little of the functional derangements of that organ, and probably less of the action of drugs on it. It is not strange therefore, that people should resort to the purge themselves, for have they not the endorsement of the profession? Can we be surprised then that the use of these drugs is almost universal? I have often asked the question: "Have you any purgative medicine in the house?" And have yet to receive a negative answer. Is not this universal use of laxatives productive of much harm? Are we not after all responsible for most of it? I firmly believe that most of the advance made by Christian Science is due to the abuse of purgatives by our profession. The sufferer goes from doctor to doctor, and either has these drugs prescribed, or at least no warning against them. Their continual use is, in many cases, their only trouble. They embrace "the faith," stop their purgatives, and are healed. Is it strange or unjust for them to charge that after years of "medical" treatment without avail, Christian Science has made them whole? There is nothing new about this, for there have been many warnings, we must admit, but alas they have not been heeded.

Robert W. Wells, Surgeon U. S. A. in 1828 (*N. Y. Med. Bul.*, Vol. I, p. 217), says: "Almost every writer and teacher of the present, on both sides of the Atlantic, appear to be infected with purging mania, and the various classes of medical students annually let loose upon the world, following implicitly the dictates of their masters, commence their careers with equally unsparing hands; and until calomel, jalap and gamboge be exhausted, there is little hope for ourselves and our posterity. They, too, will be purged out of the world, as their fathers have been before them."

Daniel Drake, in 1833 protested against strong purgatives and taught that they produced inflammation.

Dr. Hammond, as Surgeon-General of the Army, in 1863, issued an order striking calomel from the list of supplies, because its use resulted in more harm than good. Radcliffe, in

1865, and Atkinson, in 1873, exposed the evils of cathartics, and pointed out a more rational method of dealing with the ailments in which they were employed. Besides there have been repeated warnings by many writers to this time. All have doubtless done some good, but the fact remains that they are still employed as a routine by a large majority of physicians to-day, nor is this strange, for after a somewhat extensive review of the subject, I have found very few authors who do not countenance the use of purgatives in almost all diseases. Put it right home: how many patients with chronic constipation get away from you without a prescription for some laxative, to be used when "necessary?"

We must take a stand against purgatives, just as we do against narcotics. They are not to be used except when indications are clear, and only under the direction of a physician. They are instruments of evil to be avoided by them as much as possible.

One cannot but feel the necessity of greater light on the physiology of the digestive tract. Our very ignorance should behoove us to be careful in attempting to modify processes of which we know so little. We know that stomach digestion takes about seven hours, the chyme passes from the pylorus to the iliocecal valve in three to five hours (Boas-Illoway). This is accomplished by movements which are quite constant, and the deviations from health affecting the motility of the small intestines is but little undertsood, and much that is written lacks scientific basis. We do know that the contents of the small intestine is fluid, from which nutrition substances are extracted. When it reaches the colon, the motion is slower, requiring about twelve hours to pass from the cecum to the rectum. In the colon the remaining nourishment and part of the fluid is absorbed, rendering the mass semi-solid, and is stored in the sigmoid until it is ready to be expelled. Feces do not normally remain long in the rectum. The average amount of feces in twenty-four hours is from four to six ounces; 75 per cent. of the bulk should be water. The amount and consistency in health varies according to the amount and kind of food taken. If meats, albuminoids and such foods as are nearly all absorbed, especially if the quantity taken be small, the stools will be hard, small and dry, and on the other hand, in vegetarians, or those who eat much vegetables, a mushy stool is not abnormal (Boas).

There is a practical agreement that the frequency of bowel

movements may be from three daily to one in three days. The average civilized human being has one action daily, and this is considered normal by most writers, while intervals of more than three days is regarded as abnormal, still, there are many instances of longer intervals, in which the general health did not suffer. In disease, however, there are many cases in which little inconvenience is felt, although the intervals are much longer. Atkinson (*Edinburgh Med. Journal*, 1873) reports a case "where he feared hectic fever might come on if the strength of the patient were in any way lowered, he kept the bowels locked for one month, and the result was an excellent recovery." Treves says, "in several cases there was complete constipation for two or three months," who recovered health after bowels were relieved, and still longer intervals have been reported, all of which were distinctly pathological, but they show that in any condition there is no occasion for anxiety if the bowels fail to act for a number of days.

Our lack of knowledge of the physiological action of purgatives is also painfully evident. I tried to find the physiological action of salines, calomel and caster oil, the purgatives most commonly employed. The only thing I could thoroughly establish was that they are all irritants. Salines increase the amount of fluid partly by their affinity for water, and they diminish absorption, thus increasing peristalsis by distension of the bowels. Caster oil acts by its irritant properties (Butler-Biddle), while in the action of calomel there is a wide diversity of opinion.

H. C. Wood (1905) says: "The conclusion seems inevitable that mercurial purgatives given to healthy persons cause the escape of large quantities of bile from the alimentary canal."

Roberts Bartholow (1904) says: "Experiments have shown that calomel lessens the physiological activity of the liver, and consequently diminishes the production of bile; instead of stimulating the liver or acting as a cholagog, calomel must be regarded as a sedative and as having the power to allay an irritable state of the liver. This fact harmonizes in a most satisfactory way with clinical experience, for calomel has always been regarded as useful in the highest degree in those cases of "biliousness" characterized with a surplusage of bile due to an over-acting liver. Hare says: "The question as to how calomel does act, whether it is changed by the alkaline

juice of the intestines or whether it acts as calomel, or as mercury, is not settled."

Here we have two standard authors: one gives calomel to increase the flow of bile, the other to check it, and both expect to correct the "biliousness" by it. If these were the ravings of a backwoods doctor, we would pass them over without notice; but they are the teachings of the leading authoraties on therapeutics to-day. Before leaving this part of the subject, I want to call your attention to the views of Dr. Groesbeck Walsh of Chicago. I quote the following from him (*American Medicine*, Vol. IX, pp. 945–947):

"The class of cathartics is the most varied of any in our materia medica, and though differing widely in strength and relatively in effect produces results which are strikingly similar and strongly suggestive of a common agency of force.

"All catharsis is accompanied by three phenomena: (1) liquefaction of feces; (2) increase in gas formation; and (3) the induction of increased peristalsis. All forms of mercury with which we are acquainted are germicidal in action; all forms are cathartic in action.

"Mercurial catharsis is invariably accompanied by excessive gas formation, liquefaction of feces, and the induction of increased peristalsis, and differs only in degrees and duration from any form of microbe catharsis with which we are acquainted.

"*B. coli communis* is constantly present in the human intestine from the first taking of food until the death of the individual; it is the hardiest of all the intestinal bacteria, and will outstrip all other varieties under similar conditions of environment. Its excessive growth is marked by the same group of phenomena which attend the invasion of the intestinal tract by any of the pathogenic organisms, increase of gas formation, induction of increased peristalsis, and liquefaction of feces.

"The experiments of Strassburger have proved that the growth of the intestinal bacterial flora is encouraged by the use of mercurous chloride.

"The theory is advanced that mercurial catharsis is brought about by the promotion of the activity of certain of the intestinal bacteria. The results obtained by the use of the other cathartic agents so closely resemble the results obtained from the use of mercury that until definitely proved to the contrary, it would appear only reasonable to believe that they too bring

about their constitutional effects by some similar selective action upon the intestinal bacteria.

"The recognition and the use of these facts are the first means afforded us for the establishment of a definite intestinal therapy and the removal of the whole subject from the field of empiricism where it has always laid.

"The probability is brought home to us that many of the intestinal infections are to be controlled not by attempts at destruction of the triumphant species, hitherto so unsuccessful, but by a destruction secondary to and dependent upon the restoration of the normal bacterial flora of the part."

This view is supported by the fact that feces of constipation contain much less than the normal proportions of bacteria, and show less evidence of decomposition when placed in an incubator (A. Schmit. Strassburger).

Johnson (*Am. Tex. Med.*, 1896) says: "In cases of many purgative substances, it would appear that, as in diarrhea due to specific poisons, the intestinal mucus membrane is irritated, an excessive amount of epithelium is thrown off, and a pathological transudation from the blood-vessels occurs, as evidenced by the albumen which the liquid dejecta hold in solution; * * * in other words, every purgative is pathogenetic, and the repeated irritant effect of every purgative is to induce a diseased condition of the mucous membrane."

Roos treated constipation by giving live cultures of the colon bacillus. They had a laxative effect, while dead ones did not. While the evidence probably is insufficient to say that purgatives act always and exclusively by the increase of the bacterial action, we must admit that the argument is quite plausible.

It is not my purpose to discuss in detail the conditions in which purgatives are used; nor am I prepared to lay down rules for their employment. On the contrary, in view of our limited knowledge of the physiology of the intestines, and the pathology of their diseases, and diverse and contradictory conclusions, as to the physiological action of cathartics by the best authorities, from experimental and clinical observation, it seems to me that we are forced to acknowledge that the use of purgatives is empirical and as a further consideration of the fact we have abundance of evidence that they are capable of doing much harm. These considerations warn us against their promiscuous use. The public should be taught the

danger of their routine use, and the physician should prescribe them with as much care and circumspection as our present limited knowledge will permit.

Constipation is the condition for which we most often prescribe cathartics, yet the best authorities condemn them, and all agree that they are a most fruitful cause of constipation, and in most cases do no good and in many do absolute harm. In spastic constipation, they are a most potent evil.

In diarrhea they are doubtless of advantage in some cases; but unless used with great caution, will greatly aggravate the trouble. The whole subject of their use as derivatives in diseases of the heart, kidney, and brain, is vague, uncertain, and needs to be thoroughly restudied.

The employment of purgatives in the preparation of patients for surgical operations, especially on the abdominal viscera, and as a usual treatment for the complications following these operations, is almost a universal custom. So far as I have investigated, no one except M. L. Harris of Chicago (*J. A. M. A.*, 1905), has seriously questioned this practice, and our latest text-books and magazines endorse it.

He has pointed out the folly of their employment in peritonitis, sigmoiditis, obstruction of the bowels, and shows that they can only do harm.

Why should we give a purgative before a surgical operation? If the patient has fecal impaction, a purgative alone does no good. Jamison says, "Where the colon is filled, an abnormal amount of watery secretions is forced by the drug into a foul canal to mix there with its contents, of which the major portion is returned and reabsorbed in the system."

In the normal individual there is no "loading" of the bowels, so the purgative is unnecessary. If the patient is the victim of bad hygiene, and feces is retained, it is in the colon and not in the small bowel. An enema will be of more service to mechanically free this viscus of the accumulation.

In other words, the vast majority of those who come for operations have no accumulation of feces in the colon; the small minority that do, have fecal impaction which purgation is powerless to relieve. Very few, if any of them, should be purged. For nearly two years I have not exhibited laxatives in these cases. If it was an emergency, an enema was used to empty the rectum and sigmoid. If the patient was several days under observation, a light nutritious diet was relied upon to put the

intestines in the best condition. My results have been entirely satisfactory. The patients are not weakened or nauseated by the purge; they are in every way better prepared for the ordeal. When we first adopted this plan, it at once became apparent that patients suffered less with tympany. I have been trying for a long time to find a method to prevent this by diet, laxatives and intestinal antiseptics without avail. The nurses have noticed and reported a marked improvement in this respect, and that those cases that have been prepared before they came under our care by the "usual purge," almost invariably have more gas.

The routine use of laxatives after operations is entirely unnecessary. I am not prepared to say that they can be entirely dispensed with, for our patients come under our care too short a time before the operation to correct bad habits which have existed for years. In a large proportion of cases nothing whatever is needed. As soon as the patient begins to take nourishment, the bowels will act. Reis recommends a full diet very early after operations, but this is unnecessary, as there is no reason to hasten the action of the bowels. I have often, where there are no unfavorable symptoms, waited for four or five days, and in one bad case of resection of the sigmoid, waited for eleven days for a spontaneous action of the bowels. These patients were quite as comfortable as those whose bowels were moved earlier. Where tympany is troublesome, a stimulating enema is given. The only objection that I found to leaving all to nature, is that in certain patients impaction in the rectum causes some inconvenience, but enemas will relieve this. The truth is, that if no complication (peritonitis, ileus) arise, the bowels will move in due time without interference. The danger is not enhanced if they should fail to act for several days.

No one would think of giving a drug to correct an obstruction of any kind. That is entirely a question of mechanics. For peritonitis in which no operation is indicated, purgatives do harm. The ice bag and opium and the withholding of everything by mouth give the best result.

My object in presenting this paper is to direct your attention to the abuse of cathartics, and to point out some of the evils which they cause. I do not claim that in the present state of our knowledge we can do without them entirely, nor that their judicious use is disadvantageous in some cases. I will, how-

ever, venture to predict that increased knowledge of our science will much curtail their use.

DISCUSSION.

DR. JOSEPH PRICE, Philadelphia.—This paper ought to be freely discussed. I notice that there is a general tendency over the country to sidetrack ancient authorities and pioneers in most subjects, forgetting the early work of the grand old authorities and pioneers that we ought to be fond of referring to. I am particularly fond of my old teachers, all of them. I remember very well, while a student in the University of Pennsylvania, that Agnew recommended trephining and of removing a clot for apoplexy. Many things that are now claimed to be new are far from new. I know this not only from experience, but from my knowledge of the literature and of the early work of some of the pioneers.

I am not much influenced by the crack-brained religionists of the country, nor am I by two of the authorities quoted by the essayist, because some of them have been in asylums several times. I was much interested in what Dr. Walker had to say about the preparation of patients. Even the method of preparation adopted by the Mayos is practically worthless, because good nurses would tell you, if you operate on emergency cases, some of them do not do very well. The nurses say to you: "The patient is not doing well; don't you know that patient had no preparation?" Patients who have practised all sorts of indiscretions in their lives, and who have not been particular as to their diet, are likely to have their bowels loaded, which is a source of chronic infection, and a little calomel, some simple laxative, or a large quantity of fluid of some character given to them will cause free evacuations, and place such patients in a more favorable condition for successful operations. The administration of meat proteids, sterilized diets, and abundance of water may be indicated, and if followed by some simple laxative, not an irritant, it does not make them bilious; it will cause free evacuations, and putting the patients in bed will reduce the mortality from operations very much and give the nurses and the operator less anxiety. Take a hundred of these patients, and if your preparation is careful and clean and your surgery has been satisfactory, you need have no fear as to the outcome. Turpentine stupes will not be necessary. It gives less work for the nurses and makes patients so much more comfortable. Grieg Smith says that a little actual diarrhea is saving. Take a septic case, with symptoms of acute enterocolitis, spoken of by the clinician, that patient will recover by drainage, and if he did not have those stools he would die.

The preparation of these patients is very important. I am sorry that some of the younger surgical authorities are misleading the youths of the country. Most of us have done our work; we have lived up to the chloroform age, and the future is in the hands of the youths. I value the paper and the opinions of some of the authorities Dr. Walker has quoted. Many of the crack-brained religionists who are in asylums never led regular lives. They would take a cup of hot water before they rose in the morning. You know how important a good square breakfast is, and I would not have any of you live in accordance with a railroad schedule if you can avoid it. Do not eat your meals while shopping, and yet that is what some of the people do to whom I have referred.

DR. JOHN YOUNG BROWN, Saint Louis.—There was one remark made by Dr. Price which, I think, conveys the impression that the Mayos are opposed to the preparation of their patients before operation. I have had the pleasure and privilege of attending the great clinic of the Mayos at Rochester, and if there is one institution where the principles of simplicity, for which Dr. Price has fought so long and has advocated so eloquently, are carried out it is at this clinic.

They prepare their patients before operation, but not with the elaborate detail that is practised in many other institutions. The soap poultice and the bichloride pack have been abandoned. They shave, wash, and clean them, externally, with soap and water; and internally, with castor oil. They use little strychnia, and practically no morphine. The after-treatment is simple. I remember having asked Dr. William J. Mayo particularly in regard to the after-treatment of his patients, and I was impressed with the answer he gave me. He said that if the patient did well after operation he was so glad of it that he left him alone. I feel that Dr. Price should attend this clinic. I know it would be gratifying to him to see the methods of simplicity practised there.

In regard to Dr. Walker's paper, I agree with him that purgatives should be used with judgment in the preparation of patients for operation and in the post-operative treatment of surgical cases. The rectal tube and the stomach tube, as a rule, will give us better results than the excessive use of purgatives. Castor oil and calomel are excellent both before and after operation if used with judgment.

DR. OSCAR H. ELBRECHT, Saint Louis.—Dr. Walker has given us much food for reflection. While we have been satisfied with our results from the action of cathartics, as he says, yet we have not taken the time to think about by what process they act, such as by irritation, stimulation, osmosis, or otherwise. I do not care to go into that phase of the subject, because it is too physiological to discuss at this time. But I am, however, much concerned about certain kinds of cathartics that we are sadly in need of and it is a subject all of us should think about, especially in the direction

that I will call your attention to. There are times when all of us have felt that if we could move a patient's bowels within an hour or so we would gain a considerable handicap on the disease, but what have we that is absolutely reliable? Good croton oil used to do it, and when you can get a good brand of it I would advise you to buy a supply, for it is difficult to procure a reliable article. If you give it, you have about as quick a cathartic as you can use; but it should be diluted in some bland oil to avoid its escharotic properties. Give two drops of it in about two drams of olive oil and the average patient will have a bowel movement inside of an hour, but be sure you have reliable croton oil.

My principal reason for taking part in this discussion is to tell you the quickest cathartic I know of and to get you to thinking about giving a cathartic hypodermatically, for I believe we ought to have one before many years. The value of such cathartic is made plain when we compare the value of apomorphine to other emetics. There are times when we fail to evacuate bowel accumulations as quickly as we would like, especially when we want all of the eliminators to work as in cases of eclampsia. You may literally load these patients with salts and you will not usually get a movement of the bowels. Now, if we could give them an agent that would work like apomorphia to produce catharsis how valuable it would be. If we do find one we will have gained 100 per cent. in the application of cathartics. The only thing that I have found so far that approaches this method is eserin salicylate. It has been used with varying success after operations to expel flatus. In my work I have obtained results from the use of it in from twenty-five to fifty per cent. of the cases. I believe Dr. Walker is right when he says that all cathartics will produce more or less flatus. If you wish to prepare a patient for a perineorrhaphy, for instance, and you desire to lock the bowels, you cannot do so unless you start the cathartics two or three days before the operation.

In one of my patients the bowels were locked for eighteen days before there was any toxemia. The woman had previously been operated on twice by one of my friends in this Association, with a bad result, after each operation, due to infection. My luck, however, was better, for I obtained a good result. She was given cathartics for a week before the operation, was kept on a strictly liquid diet, and, as I have previously remarked, she did not have an action of the bowels for eighteen days as the result of this preparation. At the end of ten days I was about to give her the cathartic, but as she was not uncomfortable and was anxious to see how long she could go without having them move, feeling that it would aid her in securing a good result, she went eighteen days before her temperature began to rise or to show any symptoms of toxemia. I believe if we prepare patient's bowels several days in advance we will have less flatus than if we prepare them only the day before the operation. Instead of taking twenty-four

hours, it would be better to take two or three days to get the bowels thoroughly empty and keep them so by placing the patient on a liquid diet. If there is any member who knows of a better cathartic that can be used hypodermatically than eserin salicylate, I wish he would inform us. I have used elaterium, but it does not give satisfaction. I have likewise tried aloin and this, too, is not successful.

Veterinary surgeons give eserin salicylate to horses for what they call wind colic and use it in two grain doses hypodermatically.

DR. MONTGOMERY LINVILLE, Newcastle.—I want to testify to the value of eserin in these conditions. I have used it in three cases. In the first case in which I used it there was paralysis of the muscles of the bowel; the patient vomited almost constantly a black vomitus, and in twenty minutes after the hypodermatic injection of eserin we obtained a result.

I received a postal card this morning from my assistant in reference to an ectopic case which I operated on the day before I left home, and when I came away she was not in good condition. She was vomiting; her abdomen was tympanitic, and she could not retain injections. The postal card states that my assistant gave the woman eserin with a good result. The patient is now doing well.

DR. MORRIS.—How large a dose of eserin do you give?

DR. LINVILLE.—Ten drops of a ten per cent. solution hypodermatically. It does not act by the mouth. Like other drugs it does not yield good results in every case. From my slight experience with its use I should say that we can get good results in from fifty to seventy-five per cent. of the cases. I have observed no unpleasant symptoms following its use.

DR. HUGO O. PANTZER, Indianapolis.—Generally speaking, I wish to put myself on record as being fully in accord with the views expressed in the paper. My experience with gynecic cases is that they almost invariably require remedies for emptying the rectum, and these remedies commonly achieve in great part the symptomatic cure of the patients. There is no organ in the body that absorbs moisture more than the rectum. I am inclined to think that it is not second to the stomach even. This sounds paradoxical. Yet, we know the stomach to be most frequently the seat of reflex disorders, and it is greatly influenced by the emotions of the individual. This sensitiveness does not pertain, at least in degree, to the rectum. While conducting my own hospital for eight years I was in a position to make personal observations. These assured me that for purposes of medication and feeding (physiological) fluids, the rectum in many instances serves better than the stomach. Cases of acute toxemia supervening upon long retention of feces in the rectum are not infrequent. A good purgative at once relieves the headaches, the delirium, the coma, the high temperature, as they present in various cases. We certainly

have more or less of such disorders pertaining to all cases having deficient rectal evacuation.

Scientifically, we are sadly placed; we have little definite knowledge to guide us in this matter. Hence the different opinions cited by the essayist. The old doctors, guided by empiricism, gave cathartics invariably and with grateful effect. We do wisely to heed their precept. What has been said of castor oil I heartily endorse. It is a remedy employed with confidence for thousands of years. It has not been superseded by newer drugs, though these are praised as having equal virtues with castor oil and besides less repulsiveness.

DR. EDWIN RICKETTS, Cincinnati.—It has been stated by Welch that calomel is not a cholagogue. Reference has been made to the statement that one distinguished author on therapeutics says it is a sedative to the liver. In my observations of gall-bladder surgery I have made some very satisfactory demonstrations as to the action of calomel upon the liver, and a number of my colleagues depend upon the administration of calomel after cholecystotomy; and every time it has been resorted to following this operation it has given decided effects. I speak of this in connection with actual work and not as a theory. I am firmly of the opinion that it is a cholagogue, the opinions of others to the contrary notwithstanding.

In regard to the use of catharsis previous to the preparation of abdominal cases, while I am free to acknowledge that it does good, still I am of the opinion it has been and is being abused. I am not, however, yet ready to give up catharsis in selected cases. We know that the peritoneum is a great lymph sheet. We know, too, from actual experience, as reported by observers from their surgical work, that the records go to show that good results are obtained from catharsis in suitable and well-selected cases. It has a legitimate sphere of usefulness, and to say that operations should be made without resorting to catharsis is putting it rather too strongly.

Like Dr. Price, I have veneration for the kernels of truth that have been given us by our ancestors in surgery. We may go back to the time when Ephraim McDowell resorted to drainage in some of his ovariotomy cases. He improvised a drain which he made from a kid glove. Catharsis previous to abdominal section, in properly selected cases, has a desirable effect.

In regard to the use of bandages, I have promised myself not to use tight bandages, be they cloth or adhesive plaster, on any of my patients hereafter, for the reasan that they bring about a condition we desire to avoid. It defeats the very object we seek. It checks peristalsis, which should not be done in many of the cases.

The subject of catharsis is a broad one, and the views expressed by the essayist are in many respects correct; but I must take issue with him by saying that I am still of the opinion that his

assertion is too broad when he says cathartics should seldom or never be used. Undoubtedly, their use is abused; but I am sure if we will select our purgatives with more consideration in the future than we have in the past our results from their use will be better.

DR. WALKER (closing the discussion).—It was not my object in writing this paper to discuss this subject to any great extent, for the reason that it is entirely too large; but I wanted to inject into this body the thought that perhaps we are using cathartics too much. Instead of apologizing for the radical aspect of my paper, I will say that I made it conservative, because I felt I was not yet ready to say positively all I would like to say. I think the paper is entirely too conservative, and I predict that at some of the future meetings of this Association some of the gentlemen who have disagreed with me, including Dr. Price, will approve of my statements.

I have veneration for our authorities and ancestors in medicine; but we must remember that medicine stood still for centuries practically on account of our respect for Hippocrates. Dr. Price said that some of the authorities quoted are in insane asylums. You must excuse me for saying so, but I do not believe either of those men. I quoted them because they are the authors of textbooks, and are recognized as authorities in this country on therapeutics. I admit that nine-tenths of that which is said regarding cathartics in our textbooks is rot; but nevertheless they are the textbooks of to-day.

With regard to cathartics, I know you will admit that they should be given only in exceptional cases; but, as a rule, they ought to be avoided. I would like to ask Dr. Price how he knows that his patient would not get along as well without a purgative, and how he knows his mortality has been reduced by using cathartics? On a previous occasion Dr. Price said that he could tell by the facial expression of his patients whether drainage tubes had been used or not. After that I went home and used drainage tubes, because I wanted to see cheerful countenances, but I found afterward, when I discontinued drainage tubes, I could not tell the difference.

For nearly two years I have dispensed with the use of cathartics in the preparation of patients for our general operation. My patients are as cheerful as they were before this time, and my mortality is no larger. My results are better. As I said in my paper, and I say it again, our knowledge of the physiology of the intestines is meager, especially of the small intestine, and a great deal that is written about atony and other conditions of the intestine is not proven. We do not know the pathology of many of these conditions. We talk about loaded bowels. The small intestine is not loaded. It empties itself regularly, and the movements of the small intestine in nearly every individual are as

regular as the action of the heart. We do not understand the disturbances there; why, then, should we use remedies of which we know so little? It is the colon that becomes distended from the impaction of feces. You cannot remove this impaction with a purge. I want you to think of this. Do purgatives accomplish what you think they do? I think they do not. Purgatives are, at the best, makeshifts, and as used by the laity at large at present they do great harm. The average family physician, and even gentlemen who stand at the head of the profession, use cathartics freely when they ought not to do so. When Dr. Price goes home and sees his first patient I will ask him not to give that patient a purgative, and see if he is not cheerful the next morning.

DR. PRICE.—In answer to the remarks of Dr. Walker I will say that I once knew a distinguished teacher and clinician who, after practising medicine for half a century, said publicly that he did not believe from his long experience that there was anything in therapeutics worth using.

In regard to people suffering from advanced pathology and avoiding the use of laxatives, I wish to say that usually these people have accumulations that are harmful, and careful preparation in the presence of advanced pathology certainly makes these patients comfortable, so that some of them, at least, decline operations. I have done an immense amount of dispensary work during my professional career, and in many cases I have found the pelvic basin full of suppurative forms of trouble, tubal, and ovarian, and the like, and if I gave those patients a mild laxative I relieved them for the reason that I removed pressure. I made them comfortable for the time being. It is very essential to prepare many of these cases carefully by the use of simple laxatives. The bowels should be cleared of accumulative filth.

DR. WALKER (resuming).—I must insist that we should only prescribe cathartics when the indications for their use are clear. First, we should endeavor to make a correct diagnosis and then, if necessary, give cathartics for some definite purpose.

DR. PANTZER.—What do you designate as a purgative?

DR. WALKER.—A purgative is a remedy that increases peristalsis; it liquefies the feces, and increases the secretions of the intestines.

DR. PANTZER.—Not an enema, for instance?

DR. WALKER.—No; that is a simple mechanical means for emptying the bowels.

A CONSIDERATION OF THE FACTORS WHICH HAVE LOWERED THE OPERATIVE MORTALITY AND HAVE IMPROVED THE POST-OPERATIVE RESULTS.

BY

X. O. WERDER, M.D.,

Pittsburg.

THE deductions which are embodied in this paper, and are based on my own personal experience, are by no means new or startling; but some of them are perhaps not recognized by some of our surgeons to their full importance and they will, therefore, bear a free discussion by such an experienced body of men as are assembled at this meeting. They are of entirely practical nature and will be given without entering into any theoretical argumentation.

To emphasize some of the points which I wish to bring out more particularly, it was thought advisable to give some statistical figures, especially regarding mortality, of my own work in pelvic surgery done during the last twelve years; it is unnecessary for this purpose to reach back beyond this time, as we would then get into a period when abdominal surgery had not reached its stage of full development.

All cases requiring abdominal section for some pelvic lesion in my service at Mercy Hospital during this period, that is, from 1894 to 1906, are herein recorded, and also the comparatively few operated on outside of this institution during the last two years. All these operations were performed either by myself or my assistant. As the field of abdominal surgery is a large one and necessarily greatly diversified, it was thought preferable to confine myself to abdominal operations for pathological conditions in the pelvic organs, particularly as my experience is more closely identified with this, that is, gynecological, line of work than that which might, in contradistinction, be termed general abdominal surgery. The cases are taken from the Mercy Hospital report, carefully compiled by an especially-appointed registrar and published bi-annually; they are, there-

fore, presented in series of two years, excepting those from 1896 to 1899, which form only one report. The work during the last two years, of which no report has as yet been made, has been especially looked up and classified for this purpose. The cases from 1894 to 1904, covering a period of ten years, merely serve the purpose of showing the operative mortality in each series for the sake of comparison, while the last series, from September 1, 1904, to August 15, of this year, will be utilized more in detail in the discussion of the various points brought out in this paper.

From October, 1894, to October, 1896, there were recorded 213 abdominal sections, with 20 deaths, or a mortality of 9.39 per cent. (9⅓% +). From October, 1896, to October, 1899 (three years), 403 abdominal sections, with 30 deaths, or 7.44 per cent. (7½%).

From October, 1899, to October, 1900 (one year only), 165 abdominal sections, with 15 deaths, or 9 per cent. The average mortality during the first series of six years was, therefore, 8⅓ per cent.

From October, 1900, to October, 1902, 392 laparotomies were reported, with 11 deaths, or 2.8 per cent. From October, 1902, to October, 1904, 480 laparotomies, with 10 deaths, or 2 per cent. +. From September, 1904, to August 15, 1906, 598 abdominal sections, with 14 deaths, or 2.34 per cent. (2⅓% +).

During this second period of six years, there were, therefore, 1,470 sections, with 35 deaths, or an average mortality of 2.38 per cent. (2⅓% +) as compared with an average mortality of 8⅓ per cent. in the previous series.

The difference is so striking and remarkable that the year 1900 may well be termed the beginning of a new era in our abdominal work, especially so since the result was not due to any passing streak of luck, as demonstrated by the fact that the lowered mortality rate has been maintained and even slightly improved ever since, nor can this be attributed to any change in our operative material, which has remained practically the same; it must, therefore, be due to an improvement in the treatment. In what this consisted cannot be explained in a few words, as unquestionably quite a number of factors contributed to this end. One of the most important has, no doubt, been a better aseptic technique.

Since the introduction of rubber gloves, there has been a

marked improvement in aseptic results in abdominal operations, and their use has no doubt been a decided factor in the lessened mortality. While my assistants have been wearing gloves for a number of years, beginning ten years ago with Mikulicz's linen gloves, I myself was rather slow in adopting them, as I feared that they would seriously interfere with the skilled touch so essential to the pelvic surgeon. About this time, however, viz. in the year 1900, I began the systematic use of gloves for myself also, which I have continued ever since, and which I regard as the greatest and only safeguard for the patient against infection. It has given us the means of preventing infection with absolute certainty in clean cases, as shown by the record of our last 598 cases, in which there was not a single fatal infection in clean cases.

Asepsis was now used rather than antisepsis, and all preparations were made and are still made by a nurse appointed on account of her special fitness for this work, to which she devotes herself exclusively. The technique was simplified in such a manner that as few hands as possible are required; only two assistants are used, one of whom is experienced, trained and absolutely reliable, devoting his entire time to this work. He stands opposite to the operator and also takes entire charge of the pads, for which he is held responsible. The other assistant looks after the instruments and sutures only. The nurses connected with the operating room have no direct part in the operations, and are, therefore, not required to sterilize their hands.

Another factor of no less importance, was a more careful diagnosis and better preparatory treatment, especially in inflammatory and septic cases. While heretofore many cases of this character were operated on soon after their admission to the hospital, in the presence of a daily temperature, or at least soon after it became normal, no inflammatory cases are now operated on until at least three weeks of a normal temperature have been reached. This plan is not always easy to carry out, as the patients usually feel so well by that time that they are difficult to persuade of the necessity of an operation; others become so impatient during the weeks of suspense at the hospital, that it takes the greatest amount of tact and persuasion to keep them in the hospital until their condition warrants operation. But I am convinced that many lives are constantly sacrificed by the too-early operation after an

attack of acute pelvic peritonitis, and the longer an operation can be deferred after the inflammatory symptoms have subsided, the less we need fear a stirring up to renewed activity of the dormant pyogenic organisms, resulting, if not in a fatal septic peritonitis, at least in wound infection and more or less serious complications. In spite of all these precautions, six of the fourteen deaths in the last series of five hundred and ninety-eight operations were in just such cases from a septic peritonitis, proving the necessity of further delay in many of these cases.

A factor which perhaps does not receive the attention it deserves, in my opinion, is the advisability of doing your operative work as much as possible in one institution, in which you are master of your operating room, and have complete control of the personnel in charge, who will conscientiously carry out your technic in its minutest detail.

This arrangement centralizes the work for the operator who can devote more personal attention to his cases and supervise the after-treatment. He also keeps in better touch with the nurses under him, whom he can teach and instruct personally in matters most important for them to know. I believe it is to this centralization and personal supervision that the Mayos owe much of their success.

I am sure that it is largely due to this factor that I have been able to save the last four cases of intraperitoneal hemorrhage following abdominal sections. Had they been less favorably located and under less watchful care, their lives would no doubt have been sacrificed. There are other postoperative complications in which relief depends on prompt recognition and action, which is only possible when the cases are under your personal supervision, or that of an experienced assistant, trained in this line of work. It requires no little courage at times to carry out this centralization idea, because it is opposed not only by some of the patients, but what is more serious, by many of the physicians on whose patronage the operator depends, to a great extent. The patient can generally be won over by a clear statement of the advantages gained; but the physician whose motives are not always pure and unselfish is less open to persuasion. If you must operate outside of your own hospital, it should be done only with your own assistants, for reasons unnecessary to detail. One good trained assistant is an invaluable aid in an abdominal opera-

tion, and his services should be dispensed with only in emergency work when not within reach.

Another reason for our better results, was no doubt a more careful operation and better protection of the abdominal contents. The intestines in all abdominal operations are carefully packed away from the pelvis and covered with pads, so that they are usually neither seen nor touched during the active part of the operation; they are also protected from septic material, if such be in the pelvis. All raw surfaces are thoroughly and carefully covered up with peritoneal tissue, whenever such a course is feasible, and it usually is; this not only checks up all oozing, but also prevents adhesions and other undesirable complications. While we use drainage in some cases, especially septic cases, we do not let it take the place of a complete and thorough operation, and especially a restoration of the normal peritoneal coverings where such have been lost or displaced during the enucleation of the diseased structures. Such careful plastic work, as it might be termed, in the abdominal cavity, takes time and patience, and the surgeon, therefore, should never be hurried and too fatigued. We should, therefore, never operate on too many cases at one time. Two bad cases in one morning are quite sufficient, and it is generally advisable to interpose some lighter work, such as plastic operations, which give the surgeon time to rest and to recover from the strain of the previous work. Instead of crowding my work together into a few operating days, as I formerly did, I operate every day, preferably in the morning, when rested and fresh, and when the patient also is best prepared for the ordeal.

In addition to the six deaths from septic peritonitis in the last series of five hundred and ninety-eight cases already mentioned, there were two others from septic peritonitis: one was an infected ectopic gestation, with extensive bowel involvement, and the other a case of cancer of the body of the uterus, far advanced, in which the vaginal route had to be abandoned for the abdominal, on account of the friability of the uterus. This case was also complicated by a nephritis previous to operation. There was not a single case of septic peritonitis following operation in cases not previously infected.

Of the remaining six fatal cases in this series, there were three sudden deaths from embolism, two pulmonary—an unusually large percentage in our experience—two from shock

and hemorrhage within three or four hours after operation; one an intraligamentous suppurating ovarian cyst, the other a very difficult intraligamentous fibroid; this being the only death in the one hundred and eighteen cases of uterine fibroid operated on in this series. A case of chorion-epithelioma and dermoid complicating pregnancy of four and one-half months died on the twenty-third day after operation, from rapid extension and metastasis.

Of the complications occurring, I may mention four cases of fecal fistula, all of which, however, closed spontaneously before leaving the hospital, excepting one case of tubercular salpingitis and peritonitis. In addition to these, there were three cases of extensive suppuration of the abdominal walls, and fifteen cases of slighter wound infection. With the exception of the tubercular case, there was only one case leaving the hospital with an abdominal fistula, a pelvic suppuration case In this list are, of course, not included a number of slight, superficial skin irritations and infections, which healed up in a couple of days. We had, therefore, twenty-two cases of more or less serious wound infections, or $3\frac{2}{3}$ per cent., which goes to show that in spite of the greatest care in the preparation of the abdominal skin, we have failed in a number of cases to obtain a sterile operative field, a result not surprising, when we consider the difficult problem of skin disinfection.

By the use of catgut as the exclusive ligature and suture material in the abdominal cavity, except in intestinal surgery, the long tedious suppurating sinuses, so common in former days, have almost entirely become a thing of the past, as shown by the fact that we have had only one such case in almost six hundred sections. It has also practically done away with the stump exudates, which were so annoying to the patient and surgeon alike, when silk was used in the abdomen, often leaving the patient in as bad, if not a worse, condition than before the operation. The use of catgut must, therefore, be regarded as a great advance in abdominal surgery, especially so since we have learned to prepare it properly. This preparation should, whenever possible, be done under personal supervision instead of leaving it to outside parties.

Another factor which has added very much to the safety and comfort of the patient, is the employment of a special competent anesthetist, whose sole duty is to administer the anesthetic, and who thereby becomes remarkably skillful and

expert in this line of work. Not only are renal complications rarely observed now, but also protracted nausea and vomiting have become very exceptional, and the convalescence of the patient has been rendered very much smoother and pleasanter in every respect. Only those who have been fortunate enough to have such a specialist in the administration of anesthesia can fully realize the importance of such an adjunct to the operating corps.

In summing up the causes to which we attribute our better results, both in regard to operative mortality as well as post-operative morbidity, are:

1st. A more simple and better aseptic technic, including the wearing of rubber gloves for all hands concerned in the operation.

2d. Better diagnosis and more careful preparation of the patient, especially the acute inflammatory cases, whose abdominal section is delayed at least three weeks after subsidence of all acute symptoms.

3d. The employment of a trained, absolutely reliable first assistant.

4th. Centralization of all operative work, enabling the operator to give the greatest amount of personal attention to his patients.

5th. The careful closure and covering of all raw surfaces in the peritoneal cavity.

6th. The exclusive use of catgut prepared under personal supervision.

7th. A trained anesthetist, who administers a minimum amount of anesthetic consistent with good work.

DISCUSSION.

DR. HERMAN E. HAYD, Buffalo.—This is a very interesting paper, because it shows the gradual development and evolution of a surgeon. As surgeons we do unintentional mischief, yet we have the satisfaction of knowing that we accomplish a great deal of good, because we profit by our mistakes and we fortify our work by getting just such statistics as Dr. Werder has brought here to-day—namely, in reducing the mortality from eight per cent. to two in this complicated class of cases. He has also shown that he is a progressive and scientific man; that he has improved his technic; that he has added to his system of operating every-

thing that offered advantages in his work. Nevertheless, to a practical man, the question often arises whether it is not possible for us to be doing too much in carrying out this beautiful scientific technic. I think we are all getting too much afraid of germs; that we are all talking a little too much about them, and in our anxiety to perfect a technic we become careless over bigger things and leave some of the grosser lesions unattended.

There is no question that gloves are a great aid in our operative work. I use them a great deal, but there is a tendency on the part of many surgeons to use them too much. Dr. Morris has used gloves in his operative work, and I think in this discussion he will tell us that he has practically discarded their use. However, he makes his assistants and nurses wear them. But to do rapid surgical work and save life he will tell us that he can do better without gloves. No doubt one can develop tactile sensibility in time, so that he can do good work with gloves. He can do better work, however, with his fingers than he can when they are covered with gloves. Do not let me leave the impression that I never use gloves, because I do in my hernia and Alexander operations, and whenever delicate tactile sense is not required.

Dr. Werder has told us that he believes his mortality would have been reducd in the acute cases if he had kept on treating them for two weeks longer. I don't believe we should permit our patients to lie in bed for three weeks with a temperature when, in all probability, that temperature is due to a collection of pus. If it were possible for us to make an absolute diagnosis, then I can imagine it would likewise be well for us sometimes to wait. But since we all have our limitations, and since usually the signal for interference is elevation of temperature, it is a question in my mind whether to-day we should accept Dr. Werder's conclusions, and particularly after listening to what Dr. Morris and Dr. Murphy told us yesterday about diffuse peritonitis. I really feel just as Dr. Price said with reference to the use of cathartics that many of these patients with acute suffering, who come to a dispensary, are physicked thoroughly and are made temporarily comfortable then and delay their operations; yet delayed operations in these cases not only increase the complications, but the mortality, and Dr. Werder, one of the very best surgeons we have in this Association, comes to us and tells us to delay. I do not believe that his splendid statistics are the outcome of delay in these acute cases, but to experience and judgment as an operator. I believe he should have operated on them at once, and not have waited three weeks, and his results would be as good if not better.

DR. JAMES N. WEST, New York.—Perhaps the modesty of Dr. Werder is responsible for his having omitted one element which undoubtedly has considerable influence in his results of to-day, and he naturally, as we all do, turns back the leaves of his history

book and sees the results he had ten years ago and compares them with the results he obtains to-day. He has given us a beautiful recapitulation of many of those elements that make for success of operations to-day and that have so much decreased the death rate. But one of the most important elements he has not mentioned, and that is the personal element that goes on in every man's life until he reaches a time when the brain begins to fag and the hand begins to tremble and fails to perform the action which the brain tells it to do. If we are progressive men, as we go along from week to week, from month to month, we will improve in our technic and in the rapidity of operations; and in proportion as we improve in our operative work and in our asepsis, so will our patients get well more rapidly and we will diminish the death rate. The element of time comes in here, and, of course, that brings in the element of shock, and in this way our death rates are reduced through the increase of speed and perfection of technic.

For four years I have been teaching operative gynecology upon the living subject at the Post-Graduate Medical School in New York. The faculty management gives me the opportunity of selecting the men I wish to take into this class, and I believe that the effort to try to tell men when they should make haste, what points to take care of, so that the work is done nicely and exactly, has been of more aid to me than any other work in my life. Some of these men will take so much care in tying a knot that they will lose valuable time about a little detail that is entirely unnecessary. When a man has acquired the ability to know when he can hurry, and when he has learned how to do it, and when to be careful and knows how to do it, he is a genius.

DR. EDWARD J. ILL, Newark.—I congratulate Dr. Werder on the excellence of his paper. We have had the pleasure of listening to a paper which has not dealt with generalities, but facts. The author has made some fundamental changes in his operative technic; he has mentioned them, and by their means he has been enabled to lower his mortality rate very materially. From what he has said we can tell how exact he is with his asepsis. Go through the country and stop at the operating theaters and notice the difference of asepsis as carried out by different operators. Watch the nurses and see all the breaks.

Dr. Werder has only one nurse and one assistant who carry out the details of asepsis and other work in accordance with his directions. He has given us his work from year to year and his results, and his paper is one from which we can learn a great deal. I am sure, when this paper is published, we shall read it carefully and study the methods by which he has obtained such excellent results.

DR. JOSEPH PRICE, Philadelphia.—It pleases us to see what others are doing and how they are doing it. It is not fair to

say that Dr. Werder does not change his methods and improve them. We make our observations and studies in the operating room, and then bring the results of our work here for discussion.

The Germans have not adopted the use of gloves in their operative work. We have received from Germany much that has improved our work, and when I make that allusion I am going to begin with a reference to the morning work of Dr. Werder. He is a scientific man, with a scientific training, and has presented his work in a classical way, so that we cannot help, as practical men, but value a contribution of this character. We know what we are going to get when a paper comes from Dr. Werder. As I have remarked, the Germans do not use rubber gloves. That is a source of comfort to me because I have not been using them myself, and it has afforded much harsh and unprofessional criticism fired at men who slowly adopt something new, but who continue to practise their old methods. Dr. Werder's mortality has been reduced very materially by the methods he has carried out. I do not believe there is the six-hundredth of one per cent. between my mortality and that of my scientific friend.

Let me allude to the early morning work of the Germans. Martin, Olshausen, and others, past-masters in our specialty, take their evening bath and toilet as a preparation for what they are going to do to-morrow morning. Early in the history of this work, as reported by Munde, the mortality of some of the best morning operators was reduced to two per cent. While this was going on the mortality following Tait's morning work was 3.5 per cent., and in the afternoon 8.5 per cent. It is said that Bantock, at the Samaritan Hospital, doing his operative work in the morning, performed ninety ovariotomies without a death, while Thornton and others who operated in the afternoon had a mortality of 11 per cent. Were I the director of a hospital I should compel surgeons to do early morning work, but would pay them a salary for the sacrifice they would make to do this work. It is not fair to ask surgeons to go to a hospital, to bathe, scrub, and clean themselves, free from fatigue and anxiety, and expect them to do their morning's work without proper compensation. My mortality away from home from afternoon operations is above that following the morning work at home—always. There are several reasons for this which I will not stop to mention.

In regard to nurses. Some of you doubtless remember a Boston gentlemen who criticised the training of American nurses that in the Continental hospitals a nurse spent her life in the operating room. That is scarcely fair to the training schools for nurses. The man who trains nurses, who trains assistants, or tries to make operators, will always have a fraction of mortality above that of his brother surgeon who holds on to the

operating staff. I value highly the services of good nurses, particularly those whom we can entrust to go to a place and get an operating room ready for us to operate in four hours. As a rule, such nurses only come from private hospitals. The average nurse in the country, at the cross roads, and remote points from general hospitals is worthless. Reference has been made to the importance of diagnosis. We cannot emphasize that phase of the subject too strongly.

As to methods, I have made many departures. I am constantly changing my ways for specific purposes. For instance, I have adopted this plan in our system of nursing: I do not want a young woman to study nursing who does not know how to behave; who does not know how to live a clean, moral, upright life. I have adopted in our system that of the University of Pennsylvania. If a boy can behave himself at the University of Pennsylvania and graduate with honors, I do not see any reason why a young woman cannot graduate from a hospital as a good, refined nurse. It is a trial trip, you understand.

As I said just now, I am changing my ways. I have ceased to examine patients when I am called to see them by good practitioners. I want to whip practitioners up to make accurate diagnoses. You have heard me say repeatedly that I have crossed the Alleghenies one hundred times to find practitioners correct in their diagnoses. A practitioner telegraphs me, for instance, that he has a case of ectopic pregnancy in which rupture has taken place, and on my arrival I find the abdomen full of blood, showing that the diagnosis was accurately made. I operate in some six to ten hospitals around Philadelphia, being informed in advance as to the nature of the case or cases I am expected to operate on, and if I examine those patients at all, it is simply to get a clear mental picture of what I am going to do. I try to educate mystelf to that degree of refinement in diagnosis, but some of you will say that it is not safe practice to entrust other practitioners to make diagnoses for me. Whenever possible, however, I want these doctors to make their own diagnoses. That is one reason. Another is that I do not want to soil my hands before going into the peritoneal cavity. It would take much longer to wash them, and I would not be able to do as clean work as I should do.

I am satisfied that Dr. Werder is wrong in counseling delay in the class of cases under discussion. We have been over that ground again and again, and we have fought against delay in operating severely. I do not believe it is right to permit a man's house or barn to burn down before we call in the fire department. Let me cite three terrible cases.

While attending a meeting of the Tri-State Medical Society at Spartanburg, S. C., I was asked to see a little boy who was very sick. His abdomen was opened at two points. He had "busted," in common parlance; feces and urine were welling up

from the abdomen. This case made me feel ashamed of my profession. It shows the great danger of delayed operations.

A few days later I operated on a case of intestinal obstruction. I opened the abdomen, freed the guy-ropes and bands, and in this case, as in the other, found feces and urine welling up from the abdominal cavity.

A little girl was brought to me with pus and feces welling out of a hole in the abdomen. I had practised surgery for more than a quarter of a century and felt I had something new to deal with. These cases were new experiences to me, and I can assure you that if I had my choice, rather than to have dealt with them, I would have preferred to spend a week in the county jail. Now, that is just what some of Dr. Werder's cases will come to with this long, scientific preparation.

Dr. Murphy cited thirty-six cases of diffuse peritonitis without a death. He has shown us what can be accomplished by going to the limits of the pathology and inserting one or more drainage tubes.

I saw another patient ready to "bust" open the other day. I was asked to go to Keytesville to see a woman on whom criminal abortion had been attempted with a crochet needle, the needle having perforated the uterus. The doctor said he had cleansed the uterus, and had gone to Bedford to attend a meeting of a State medical society. When he came back he telegraphed and asked me if I would see the patient with him, as her condition was desperate. Her abdomen was enormously distended, and her whole condition rather alarming. The uterus was down under the pubic arch, so that I could scarcely introduce my finger into the vagina. There was considerable pus present. All of these cases illustrate in a striking way the dangers of delayed operations.

DR. S. STARK, Cincinnati.—I have been very much interested in this paper. The practice of Dr. Werder is in conformity with the pathological conditions found in old cases of pus tubes, abscessed ovaries, and the like. We know that during the period of active development of salpingitis and ovarian inflammation the germs are multiplying rapidly. Furthermore, we know that if a sufficient length of time is given for these inflammations to subside, the germs die within their own toxines. I do not remember the exact statistics as given by various pathologists and operators, but I believe that not more than possibly 4 per cent. of old pus tubes and abscess of the ovaries present germs. They are nearly all sterile; consequently late operation would be in line with the pathological findings.

As to the gravity or danger of allowing these cases to go on, I have seen many, many cases of pelvic inflammation the result of gonorrheal infection of the tubes and ovaries, but have never seen a patient die in consequence of a general diffuse septic

peritonitis developing from a pelvic infection. This infection remains local, and stress was laid on this by Dr. Murphy in his paper yesterday, when he said that the lower abdomen behaves entirely different from the upper abdominal zone in this respect. Our line of treatment, therefore, in infections of the lower abdominal cavity should be different from what it is above. The few patients I have lost, after abdominal section for pus tubes and abscess of the ovaries, were cases in which there was an active virulent condition of the pus. In the old cases, if the tubes rupture, or if we have an abscess of the ovary rupture, we can close up the abdomen without any drainage, without fear. I do that continually and have absolutely no trouble. The patients invariably get well. I had hoped some of my associates here in the city would say something on this subject, for the reason that I know they take the same position that I do in this matter. I know it is the routine practice at the City Hospital for the staff to wait in these cases until the acute pelvic inflammation has subsided before they perform the operation of salpingo-oophorectomy. This is what, I believe, Dr. Werder referred to in particular, for the reason that at such a time the virulence of the pus has subsided. I am satisfied that if the high temperature, if the general peritoneal inflammation persists too long, unreasonably long, Dr. Werder would not wait. He would wait for three of four weeks, the usual time for the inflammation to subside; but if it continued for five or six weeks, he would operate.

With regard to the use of gloves, I wish to say that operating as I do at the City and Jewish hospitals I have been employing two different methods. At the City Hospital I operate without gloves and without mask; and at the Jewish Hospital I have been operating with the mask and with gloves. My results at the City Hospital are just as good as those obtained at the Jewish Hospital. For the reason that my tactile sense without gloves is more acute. I am beginning to abandon the use of gloves in operating. The rubber glove is a menace. It has been shown that under the influence of the additional heat that is produced by the wearing of the rubber glove, the staphylococcus, whose normal habitat is in the skin, is stimulated to multiply in short order, and likewise those germs which we cannot get rid of under the finger-nails or matrix even by thorough scrubbing. Wearing of the rubber glove is a menace, and its use ought to be discarded.

DR. O. H. ELBRECHT, Saint Louis.—I would like to ask Dr. Stark whether any actual analyses have been made of the cases of pelvis or ovarian abscesses and pus tubes, which he said contained about 4 per cent. bacteria.

DR. STARK.—I stated that I could not recall the exact statistics, but the figures I have mentioned are the figures given by

Kelly and others which I had in mind when I spoke of Kelly's report of ninety odd cases of tubal abscess in which only 4 per cent. of germs were found present. In ninety-six odd cases only 2 per cent. of germs were found.

DR. ELBRECHT.—I think the percentage of germs found in these abscesses is much higher than that mentioned by Dr. Stark. This is practically true when the streptococcus is concerned. It is our practice to make a culture and a cover-glass smear of any pus that comes from the abdominal cavity, to find out what it is and to ascertain, if possible, an approximate percentage of the cases that contain bacteria. We have done this in perhaps 200 cases and we have found that the percentage of germs in such pus is greater than that quoted by Dr. Stark.

If you will take the trouble to get enough material for culture, say 10 drops or more, and grow it in bouillon on agar of blood serum and give it plenty of time to grow, you will find a much larger percentage of streptococci in your cases than you have heretofore. If you only wait twenty-four to thirty-six hours for them to grow, you will not find them, for if you have had any experience in growing streptococci on artificial media, you must know that they grow slowly. This is the usual mistake that is made in the technic and that is one reason why streptococci are not found oftener than they are. We find as high a percentage of streptococci in cases of pus tubes as we do staphylococci, which occur in low percentages. Gonococci, which are the most common causative factor of pus tubes, are seldom found because the pus is diluted. In acute cases you may find them, but in the old cases you will find usually sterile pus, and the reason we call it sterile is not because the bacteria are not there, but because they are scattered too much and can but seldom be grown successfully on an artificial media, and this includes also the medias that are especially prepared for gonococci. With regard to the use of rubber gloves, an important point is to prevent the escape from the glove of the macerated extractions of the upper layers of the skin. If you keep on rubber gloves for a considerable time, in operating, sweating and maceration of the skin occur under them, this being especially so in warm weather. If you hold your hand up, the liquids run out of the glove on your arm and one of your assistants or an instrument may touch your arm at just that point, and in this way infectious material can be carried into the wound. The juice and extractives that come from having macerated the finger-nails under the rubber glove is always dangerous. This can easily be prevented, if you will wrap two layers of gauze around the wrist as a cuff under the gauntlet of the glove. It will absorb this juice as it starts to run out of the glove and the arm will remain perfectly dry. This is a routine practice for us, for I feel that it helps a great deal toward preventing accidental infection, and if you will

take careful notice of this fact, you will be impressed by the frequency of this little accident.

DR. WERDER (closing the discussion).—I wish to refer to several points that have been mentioned in the discussion, one of which relates to the use of rubber gloves. Now, I had the same scruples about the use of gloves that some of the gentlemen have mentioned. At first I had considerable difficulty to accustom myself to them and they seriously interfered with my sense of touch. It happened several times in bad cases of pyosalpinx, for instance, which required very skilful work in the pelvis, that I was compelled to remove the gloves before I could finish the operation, and that is a somewhat dangerous thing to do. But a little practice and experience soon overcame these difficulties and at the present time I can do operative work just as well with gloves as I formerly did without them. No doubt all surgeons have similar experiences at first, but in time they learn to work with them just as skilfully and rapidly as without them.

I think the point mentioned by Dr. Elbrecht in regard to drippings from the gloves is a very good one, and that has induced me to use sleeves for the last three or four years. These are tightened around the arm so that any fluid escaping from the glove is caught by the sleeve and does not reach the operative field.

In regard to operating on acute cases, I think that question has been answered by Dr. Stark in a very thorough manner. There is a marked difference between an infection and suppuration in the pelvis and that condition in the abdomen. No one would think of delaying operative interference in a case of appendicitis for three weeks or longer, because that would be seriously jeopardizing the patient's life every day. Deaths from pelvic suppuration *per se* are rare, however, especially when kept under constant observation. In these cases the acute symptoms subside; the patients recover and generally remain well for several months, when they may have another attack. If we operate on these cases it is because it is the only way to cure them of their chronic invalidism and not so much because their lives are in imminent peril. Delay in these cases is usually safe provided we have the patient under our own care in the hospital. I recall a number of deaths which I feel confident were due to too much haste in operating; the operations being done against my better judgment, giving way to the clamors of patient and friends. It is not pleasant to tell patients every day that they must have a little patience; that they will be operated on in a week or in two weeks. At the same time it is the only way to save life in some of these cases. You see on the walls here displayed charts giving you the statistics of abdominal operations performed by an excellent surgeon whose results are certainly most creditable to him. But look at his mortality in operations for pelvic infec-

tions and abscesses—20 per cent. mortality; pelvic peritonitis, 18 per cent. mortality; pyosalpinx, 5 per cent. mortality. This high mortality is certainly not due to any lack of skill or care because his results in other lines of abdominal surgery are most excellent. It is not because he is not a skilful operator, but because he, no doubt, operates during acute attacks just as he does in appendicitis. Had he waited three weeks or longer after the subsidence of the acute symptoms, he would not have had such a high mortality. My experience in the past has shown us that it is far safer to wait during the acute attack than to operate. If surgeons in general would appreciate that fact in cases of pyosalpinx or of pelvic peritonitis a mortality as high as 14 and 20 per cent. would be unknown, and many such patients could be saved that now are sacrificed to too hasty operations. We rarely have a death from pelvic peritonitis, but if the case is so bad as to show no evidence of improvement after a reasonable time, and there is a large collection of pus in the pelvis, we are justified in such a case in resorting to vaginal incision and drainage. While this as a rule is poor surgery, there are exceptional cases in which this procedure becomes a life-saving one, as it tides the patient over this dangerous period and puts her in a more favorable condition for a radical operation subsequently, if such be necessary.

It has been said that speed is a factor of some importance in operating, and I fully agree with what has been said in regard to that point. It is not so important, however, when you have a good anesthetist. It makes a very great difference as to the amount of ether your patient is given. It is the amount of anesthetic used, oftener than speed, that has a marked influence on our results.

I agree with Dr. Price when he says that it is our duty not only to save life, but to train nurses so that they may go out and be a help to us beyond the hospital. This I try to do largely through my operating room nurse, who is quite expert in her work, does nothing else but attend to the operating room, and who has two nurses under her in training for a period of two months, during which time they acquire a pretty thorough knowledge of surgical technic.

THE MANAGEMENT OF BOWEL OF DOUBTFUL VITALITY IN OPERATIONS FOR RELIEF OF STRANGULATED HERNIA AND INTESTINAL OBSTRUCTION.

BY

RUFUS B. HALL, M.D.

Cincinnati.

It is a fact well recognized by all operators that the injured bowel in all hernia and obstruction operations may be divided into three groups, as soon as the operation has progressed to the stage where it can be inspected. First, those cases in which it is clearly evident that a resection is unnecessary; second, those cases in which it is positively certain that resection must be performed; third, a group in which the surgeon is in doubt as to the vitality of the injured portion of bowel. It is to the treatment of this uncertain condition, whether it occurs in internal obstruction, or in incarcerated bowel in a strangulated hernia, that the writer wishes to call attention. He has devised a means which has proved eminently satisfactory in a number of cases. It is simple in its application and harmless, if perchance it should even be unnecessary, and protects the patient from the dangers attending the sudden perforation which sometimes occurs in these doubtful cases three or four days after the operation. He has not seen it mentioned in any textbook or medical journal. If any one else is using it, he has no knowledge of it. He has employed this method in several instances and is convinced that it cannot endanger the patient in any way, and he believes that it places in the hands of the surgeon the means by which he can save lives that would otherwise be lost.

The method is not applicable in all kinds of bowel injury, and is advised only with certain definite conditions and surroundings. Almost all operators can recall cases operated upon for hernia or obstruction in which there was but a small area, perhaps not larger than a nickel or a quarter of a dollar, about which they were in doubt or that gave them only slight anxiety, yet they decided not to do a resection on account of the sur-

roundings. While most of these cases recover without a bad symptom, occasionally perforation occurs at the injured point and the patient dies within three or four days after the operation, the perforation taking place when he is convalescent, so far as the operation is concerned. In fact, this has occurred so often after the operation for hernia that the students in clinics often say, "The operation was a success, but the patient died." It is in these uncertain cases in which the suspected area is of very limited extent, and, especially following the operation for hernia, that the method is most likely to be necessary and appears to be best adapted. The writer has employed it in five cases after hernia operations, and has never seen any ill effects following its use. He has also used it in four cases of obstruction in which the abdomen was opened, one of the patients having a perforation, which occurred on the third day after the operation.

The method consists in employing a single layer of iodoform gauze about three inches broad, placing it against one side of the mesentery and carrying it over the diseased bowel until it rests upon the mesentery upon the opposite side, extending a couple of inches beyond the bowel of doubtful vitality upon each side, and placing this loop of bowel surrounded by the gauze just inside of the abdomen. The wound is dressed, if it is intraabdominal, by leaving one or two stitches untied; if a hernia operation, as an open wound, in either case leaving the end of the gauze surrounding the bowel projecting out of the wound a foot or more, so that there is no danger of losing it inside.

It is a fact that those will recall, who have used gauze or gauze pads in intraabdominal work, that after they remain a few minutes in contact with the peritoneum they are more or less adherent.

In any portion of the intestinal tract that is manipulated to any extent, especially any portion that has been subjected to pressure or strangulation, the peristalsis is suspended for several hours or longer, perhaps for days. This condition favors this method of treatment because the gauze will not become displaced if there is no peristalsis. Immediately after operation, the peritoneum commences the process of walling off the gauze which fixes it by adhesive inflammation, and by the end of three or four hours it is thoroughly walled in with a layer of lymph. The perforation is not likely to occur for three or four days or later. By that time the gauze is thoroughly

walled off, and, if leakage of gas or feces occurs, there is a ready exit for it along the strip of gauze through the open wound, and a temporary artificial anus is established. Within a day or so after this occurs, the gauze can be removed by a little care, without using force, and a small soft rubber drainage tube may be used in its place, to remain as long as necessary. There are three conditions in which the method may be used to advantage. The writer will report one case in each group as illustrating its use: First, in case of hernia in which a resection has not been done; second, in cases of hernia in which resection has been performed; third, in certain cases in which the abdomen has been opened.

CASE I.—This method was first suggested to the writer when he was asked to see a patient at her home in the country in the night time, June 14, 1900. The patient had been ill for forty-eight hours, and after twenty-four hours her doctor suspected that she had intestinal obstruction. It was found that she had a small femoral hernia, though she was not conscious of its existence. It was decided at once to operate, believing that this was the cause of her symptoms. Upon opening the sac a small knuckle of intestine was found incarcerated. The ring was enlarged, and the bowel drawn down and cleansed. The portion of bowel involved was about as large as a man's thumb nail. While this was perfectly dark (almost black), the luster was not entirely gone, but at one point, not longer than three-eighths of an inch, the luster appeared to be absent. This was repaired by fine catgut suture. I felt very uneasy about putting the bowel inside. As my only assistant was the family doctor, and I was working by lamplight, I decided to treat the bowel as described above, dressing the incision as an open wound, packing the canal temporarily with gauze. The gauze in the canal and open wound was changed daily.

On the third day gas escaped from the wound, with a distinct odor of feces, and, on the following day, feces appeared upon the dressing. For several days, feces in considerable quantities came through the wound. On the sixth day, the gauze surrounding the bowel was all removed. The wound was kept clean. Only a small short drainage tube extending just through the abdominal wall was inserted. This was changed twice daily and the wound packed with gauze. The patient made a prompt and complete recovery without a single bad symptom, excepting the fecal fistula. This closed spontaneously without difficulty on the sixteenth day after the operation.

This method of treating the injured bowel may be of great value in operations for strangulated hernia, where the bowel must be resected, especially where a Murphy button has been used. Nearly all the deaths following the use of the Murphy button have come about on account of leakage showing some defect in the technic of placing the button, or as is more likely to occur in hernia, some disarrangement of the bowel at the juncture in crowding the button back into the abdomen through a narrow opening.

In using the button in intraabdominal operations, this danger does not exist, but I am convinced, from personal experience, that it is a real danger in hernia operations. There is another reason why it might be used. In all the cases where a resection is necessary, the field of operation is dirty. One must handle clean bowel with more or less contaminated hands, and if this method is employed, the contaminated bowel can be fixed just inside of the abdomen, and thereby drainage can be established. If leakage should occur, as it sometimes does, one does not lose the patient, as the following case illustrates.

CASE II.—On October 12, 1905, at 8 P.M., Mr. G. H., age 46, of Huntington, W. Va., was admitted to the Bethesda Hospital under my care after suffering from a strangulated inguinal hernia for six days. The patient was in a very serious condition, with cold and clammy extremities and pulse at 148. He had been the subject of an old irreducible omental hernia for more than twenty years, and on this account, the real condition of strangulated bowel had been overlooked. The operation was performed at once and in the sac were found several ounces of feces and pus, a large piece of gangrenous omentum and a short piece of small intestine, perhaps three inches in length. The bowel was gangrenous. A resection was made, using a Murphy button for uniting the bowel. On account of the very foul condition of the sac it was considered that more or less contamination of the bowel must occur. On account, also, of the extreme and critical condition of the patient, a very hurried operation was performed. For fear of additional infection, the bowel was surrounded as above, by a strip of iodoform gauze and replaced just inside of the abdomen. The gauze fixed the bowel at this location, the canal wound was packed with gauze and the incision dressed as an open wound. The stomach was irrigated until the water returned clear and the patient was put to bed. The man had a tedious convalescence,

owing to an infarct in his lung, which resulted in an abscess, but he finally recovered and returned to his home on November 30. On the fifth day, a distinct odor of feces was observed on the dressing, and gas passed through the wound. On the sixth day the Murphy button was passed and a small amount of feces observed on the dressings, The same day the gauze surrounding the bowel was removed and the wound irrigated and a small soft rubber drainage tube was placed in the canal. Feces in small quantities appeared on the dressings for six or eight days, after which time the wound closed and remained so. The patient is now enjoying excellent health. I feel certain that by the use of the gauze in this case and thus fixing the bowel near the external wound, the danger of the infection was lessened and the patient was protected from the danger of a leakage at the point of injury to the bowel.

CASE III.—Mrs. W., aged 37, mother of several children, was admitted to my service in the Presbyterian Hospital, February 13, 1903, with intestinal obstruction existing fifty hours. The abdomen was somewhat distended, especially on the right side above the anterior superior spine of the ilium. She was immediately prepared for operation, which was performed on February 13, 1903.

When the abdomen was opened, quite a quantity of blood-stained fluid was found in the peritoneal cavity. There was a volvulus involving about fourteen inches of bowel. This loop of bowel was much distended and claret colored. As soon as the volvulus was relieved and hot applications applied, the bowel partially assumed its normal color. There was only one suspicious place, which was near the root of the mesentery, about one-fourth of an inch broad and three-quarters of an inch long, running crossways on the bowel. This was supported by fine catgut, protected by a strip of gauze as above described.

The patient recovered without a bad symptom, and convalescence was established within twenty-four hours. Every symptom was favorable up to the end of the third day, at which time she had a rise of temperature and a rapid pulse, and complained of considerable pain in the region of the wound. The strip of gauze through the abdominal wound was twisted upon itself to loosen it at the edge of the wound, where it had become adherent, and immediately gas escaped from the cavity. This gas had a feculent odor. The gas continued to escape for twenty-four hours, after which a small quantity of feces ap-

peared. The feces continued to appear only in small quantities for six or eight days. At the end of the sixth day after the operation, the gauze was all removed and a soft rubber drainage tube, extending through the abdominal wall, was inserted. Except for the fecal fistula, which closed of its own account on the seventeenth day after the operation, the patient had an uninterrupted recovery. I am convinced that few surgeons would have treated this condition at this time by a resection of the bowel. I am also convinced that this condition does not favor the repair of the injury by suture, because the bowel is so much thickened and softened; with the least pressure in coaptation, the stitches tear out and it is in similar cases where we trust the stitches alone after hernia operations that we have perforations and death.

Three other cases were treated in this manner; none of them had perforation. The gauze was removed on the sixth day, and they were no worse for having it, and it gave them additional protection against the dangers of perforation and general peritonitis.

DISCUSSION.

DR. JOHN F. ERDMANN, New York.—In the main I agree with Dr. Hall, particularly with reference to the use of gauze to guard against the possibility of leakage and of giving proper exit for the drainage of matter that may follow. I do not believe it is of advantage in any of these cases to wait, especially where the patients can be prepared properly, and where we have hospital surroundings and facilities and a sufficient amount of help to assist in doing a proper resection of the intestine. The question of handling the filthy portion of the intestine and thereby contaminating the peritoneal cavity is not a great one, because we know the peritoneum will take care of a considerable amount of infection that is introduced during the course of a resection. I never drain a resection case in which I do end-to-end suture; neither do I drain a Murphy button anastomosis case unless the anastomosis is made in the large bowel, and there I drain on account of the fact that the mesocolon, or mesocecum, may not come in contact with the entire intestinal circumference.

A question that arises with me is, Does gauze act as an irritating body to a sufficient degree to produce separation of the suspected points or areas? to which Dr. Hall has called our attention. It has been my practice in one or two instances to take a circular suture or a double row of Lembert sutures and cover the suspected area. If it is of sufficient size, I undertake, as the essayist has done, excision of the area, making a direct suture line in the position of the excised portion.

PERITONEAL ADHESIONS.

BY
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New York.

WITH peritoneal adhesions we blow hot and we blow cold today. We make peritoneal adhesions to prevent the occurrence of volvulus, to hold the abdominal and pelvic viscera in place, and for protection of defects. On the other hand, we have peritoneal adhesions which call for attention on the part of the surgeon, and those are the cases of which I wish to speak this afternoon. We have cases of peritoneal adhesion equally extensive with those calling for the surgeon's work, but cases in which the patient is not aware that he or she, as the case may be, has any peritoneal adhesions. It is the elaboration of these cases that calls for such observation as the members of this association are capable of making, and the proper classification of the cases for work, or for no work. When we have peritoneal exudation as a result of irritation, no matter what the cause of the irritation—toxins, fish-bone, bullet, stiletto, ruptured appendix—the exudation has two or three functions to perform; to close the stomata in the endothelium, in order to keep the toxins from entering the lymph channels too rapidly. The exudation dilutes toxins and parries the blow. It limits peristalsis, so that the toxin, or whatever the irritating element may be, will not become diffuse. This is speaking generally. After the function of the lymph exudate for protective purposes has passed, it becomes gradually absorbed, disappears. The tendency is for the exudate to disappear out of this great lymph chamber, the peritoneal cavity. But there are many permanent forms of peritoneal adhesion, and many forms calling for immediate attention in cases of recent peritoneal adhesion. I will not go over the subject as a whole, but will speak only of a few principles.

First, of the cases of peritoneal adhesion calling for a correct diagnosis and proper care by the surgeon. Very many cases of peritoneal adhesion are cases in which credit for symptoms

is given to some entirely different cause. We have as favorite fields for chronic peritoneal adhesion the region of the cecum and appendix, the gall-bladder, the sigmoid region, and the pelvis. From which group of adhesions do we get the greatest amount of disturbance calling for attention on the part of the surgeon? I think from the region of the gall-bladder; the bile tract. Why? Because in this region we are near the great solar plexus, and because the organs in the vicinity of these adhesions are more movable than the organs in the vicinity of the other common groups of adhesion. The effect of a liver which moves with every inspiration and pulls upon adhesions, the effect of a diaphragm which moves with every inspiration and pulls upon adhesions; the effect of the peristaltic movement of a stomach which is adherent at the pylorus, will give more disturbance in the region of the gall-bladder and bile tracts than any other group of adhesions.

Next in the order of importance I believe to be the group of adhesions in the region of the cecum and appendix. And the reason why this group of adhesions seems to cause more disturbance than some others is because the peristalsis of the large bowel begins at this point, and the inhibition of peristalsis of the large bowel at this point gives rise to a train of symptoms and complications which become important in the concatenation.

Next in point of importance are the adhesions of the pelvic region, which, although extremely common, do not call for so much interference on the part of the surgeon as other groups of adhesions, for the reason that the viscera involved rest upon the pelvic floor and are not subject to such constant and varying degrees of friction.

Last of all in importance we have the adhesions about the sigmoid, which give rise to comparatively little disturbance. Aside from these common adhesion areas we have very many groups of cases with various points of adhesion of the omentum; points of adhesion of certain loops of bowel, various odd groups. But the four dominant groups are the ones which the surgeon should keep in mind most of the time when he is speaking of peritoneal adhesions in general, and he has to think of the bile tract group as the one productive of the most disturbance; of the greater number of disturbances calling for his attention.

The reason why we have adhesions so abundantly in the

pelvis has been well worked out. We all know why we have adhesions so frequently in the region of the appendix. We know the reason why we have adhesions so commonly in the vicinity of the sigmoid. The latter were not well known until Robinson called attention to the fact that the psoas muscle caused traumatism of the fixed portion of the descending colon or sigmoid at that point, and he showed us the anatomical reason for adhesions there. The chief reason for the group of abundant adhesions in the region of the gall-bladder and bile tract, is because we have a constant source of infection in the colon bacilli taken up from the bowel lumen by the lymphatics and bloodvessels of the bowel wall and carried through the portal system to the liver, excreted by the liver as still active colonies of colon bacilli; so that they produce various catarrhs of the bile tract, and these catarrhs of the bile tract, caused by the colon bacillus on its way out of jail, are often very obscure. We call them acute gastritis, gastroenteritis, chronic hepatitis, malarial hepatitis, chronic malarial infection, biliousness; in fact, the list of names that go to cover these insidious bile-tract infections can be duplicated by the list of names we formerly gave to appendicitis. Just pick up all the things that were formerly said to be present in appendicitis cases when they were called everything else, and apply the names to these insidious infections of the bile tract, and you cover the ground.

Often we have to deal with these adhesions surgically, and I will make my remarks concise upon that point, simply referring to the surgery, the methods of surgery to be chosen in dealing with peritoneal adhesions occurring anywhere in the peritoneal cavity, but chiefly in the four regions named.

At first I employed the method of simple separation of adhesions. Just one moment before we get to that point; and let me speak of diagnostic location of the groups of adhesions causing reflex disturbance. That is a very important matter, and here my pair of points comes into play again. I refer, first, to that point an inch away on either side of the navel which marks a lumbar ganglion. If a patient is suffering, let us say, from nervous dyspepsia, and we suspect that there may be an adhesion element in the case, if adhesions in the pelvis are causing the chronic nervous dyspepsia, both of the lumbar ganglia will be tender on pressure. If we have adhesions in the appendix region causing the patient's dyspepsia, we have only the lumbar ganglion on the right side, an inch from the navel.

tender on pressure. If the adhesions in the sigmoid region are causing the patient's dyspepsia, only the lumbar ganglion on the left side of the navel is tender on pressure. If the patient's dyspepsia is caused by adhesions in the bile tract region, or by eyestrain, a most common cause of nervous dyspepsia, then neither one of my pair of points is in evidence. These will be found to be of great practical importance in your daily office work. Just press on these little buttons and see what you bring out. In making a diagnosis of abdominal conditions you can sometimes feel all over the wall in the dark without touching the little electric button, but when you touch it the light is suddenly turned on. That is what happens with these points.

What are we going to do with these cases? There are instances in which patients suffer moderately from peritoneal adhesions that do not call for much surgical attention. But the patients may think that they do. In these cases we have to rule out the minor psychoses. Do not forget the importance of the minor psychoses. Throw hysteria into this basket, and neurasthenia with it. Take the whole basketful of job-lot diagnoses and call them all minor psychoses, and this group of minor psychoses must be recognized when we are to estimate the value of the symptoms in any case with peritoneal adhesions, because one patient will exaggerate the importance of a small adhesion tremendously and another patient will care little about adhesions that fill the whole peritoneal cavity. So the matter of nervous instability of the patient is a factor to be weighed in connection with the presence of the adhesions.

I have just seen one patient belonging to the fashionable circle in New York who had been in bed for two years with adhesions following a septic salpingitis. I did the second operation two years ago for the separation of adhesions. I used at that time Cargile membrane, covering large separated areas with this membrane, and told the patient that she would probably be up in four weeks. She had been two years in bed. I did not give quite enough weight to the patient's mental condition. She enjoyed being in bed. Her friends would bring flowers to her, relate stories, tell her things about the neighbors, so that she seemed delighted to stay in bed and did not want to get out. But she really wanted to play golf. Her only incentive was to play golf. When she tried to walk about she had a good deal of pulling still. I believed she had more adhesions. I operated on her a few months ago again at one of our

popular resorts and found a little adhesion, about as wide as my forefinger and about one-fourth as long as my forefinger, hitching a loop of bowel to the region of the left broad ligament. One or two of her physicians said she would now be free from trouble, that she would get well. Another one, a consultant in the case, said no. He said the separation of a little adhesion like that would make no difference; the patient would not get well. I said, we will wait and see—a good, safe plan. I did not have to make a prognosis. The patient wrote me recently and said that she had not been so well for many years. She was up and all ready to play golf, fine and strong, with rosy cheeks, all this being accomplished by an artistic twist of the wrist. One would hardly realize that such an unimportant thing as that slight adhesion would be such a factor in that woman's life. It was the pivot of her whole life.

As to the method of caring for adhesions, I first began by simply separating adhesions. We were doing that in the eighties. I was in Berlin and saw Martin rubbing separated adhesions with oil. I tried that for a while without getting marked results; then I followed the plan of filling the peritoneal cavity with saline solution after operation, and there can be no doubt that that plan has elements of value. But it is not wholly satisfactory, because the salt solution is absorbed too rapidly. Then I adopted the method of using the aristol film, because I noticed when we exposed raw peritoneal surfaces to the air there was a tendency for a lymph coagulum to form just as it did in the form of a glaze when we amputated legs in the olden days. This glaze forms on the surfaces because the lymph coagulum has formed. If we include in the lymph coagulum an insoluble material like aristol, we include something which offers a mechanical obstacle to readhesion at that point. So this happened to be one of many things with which I experimented. I experimented with many different things. But the triiodide of thymol afforded the best mechanical protection; it made a smooth coagulum with the lymph and remained for I do not know how long in my rabbits. I kept the rabbits a year and found it was still present. But it undergoes slow absorption, due to solution by the fat in retrograde changes in cells. The normal retrograde change in surrounding cells gives rise to formation of fat, and this fat takes up a little aristol, so that in time it disappears in that way. It remains in this lymph coagulum as a mechanical obstacle to

readhesion at that point for months and years, so that it proved an extremely satisfactory means for preventing the recurrence of adhesions except in the cases where there was oozing, as from a broad torn surface, and in such cases it would not be effective because it would not stick.

Now we can use other means for stopping this oozing temporarily, as suprarenal extract, antipyrin, ergot. We can stop the oozing long enough to apply our aristol and have the lymph coagulum form, and we do not care how much it oozes. That will stop the oozing. It is a good practical way to stop extensive oozing. This lymph-aristol coagulum will hold it up. That is one way. Then I have used Senn's omental grafts in appropriate cases, and, finally, taking up the Cargile membrane, which is made of the sterilized peritoneum of the ox. I am now at work having some shark's peritoneum prepared for this purpose, because the shark's peritoneum can be obtained in large quantities and cheaply, and when we are able to fill the market with shark's peritoneum we shall all have this so-called Cargile membrane at hand for use cheaply. The Cargile membrane, simply prepared, is absorbed too quickly in many cases, and adhesion takes place at once, so that the patients are no better off than if it had not been used.

The experiments reported in the Annals of Surgery two years ago, and finishing with the statement that the Cargile membrane is not of value in preventing readhesion, were based on incomplete observation and upon observations on dogs only. Dogs are pretty bad animals to experiment upon, about as bad as horses, because of the ease with which peritoneal adhesions form, and after almost any sort of irritation, but there is much less tendency to permanent adhesion or adhesion from the irritation caused by the presence of a soft membrane like the Cargile membrane in rabbits and human species. I have found practically that in rabbits and in human species the Cargile membrane prevents the recurrence of adhesion very regularly, although sometimes not completely. Sometimes we may have to repeat the operation, and I have said to some of my patients with extensive adhesions, "We may have to operate two or three times upon you. We may not be able to do this all at once. We will do the best we can." And that is better than anything I have had before, with the exception of the aristol film. At this moment I am not willing to state whether I be-

lieve the Cargile membrane or the aristol film method to be the better of the two, but both are distinctly valuable in their proper places.

DISCUSSION.

Dr. Edwin Ricketts, Cincinnati, O., being asked to open the discussion, said: Mr. President, the work of Dr. Morris is of an experimental nature, and very little can be said except to highly commend the essayist for the excellent work he has given us on this most interesting subject. Such a contribution should not go by without at least an expression of thanks to him.

THE UTILIZATION OF THE BROAD AND ROUND UTERINE LIGAMENTS IN SUPRAVAGINAL HYSTERECTOMY.

BY

WALTER B. DORSETT, M.D.,

Saint Louis.

ALTHOUGH what I may have to say upon this subject is original, I am not unmindful of the fact that other operators have worked along these lines.

I was led to put into practice the utilization of the broad and round ligaments of the uterus as a part of the finishing touch in hysterectomies by the subsequent distressing symptoms complained of by a few patients. In brief, these symptoms were continued pain in the pelvis, accompanied with a dragging sensation in the lower abdomen and back, together with vesical irritation to a marked degree, and in two cases unsatisfactory sexual intercourse due to a considerable shortening of the vaginal tube.

After a careful study of the etiology of these symptoms, I was led to believe that there was a just cause for suffering and that this cause was my imperfect technic; the manner of dealing with the stump of the uterus after the uterine tumor had been removed; in that the loose flaps of the broad ligament left hanging in the pelvis in no way held the stump in its normal position, and that in the process of cicatrization the site of the incisions healed and left a cicatrix approximately as long as the original cut surface of the broad ligaments.

When we consider the normal size and weight of the uterus, the natural intraabdominal pressure and the sustaining influence of the several sets of ligaments, we can appreciate to what extent the remaining portion of the uterine body has been robbed of agencies that nature intended should maintain it in its normal position.

Let us for a moment consider a case of fibromyoma of the uterus of considerable size and weight and of long duration It has, in its growth, encroached upon the normal territory of

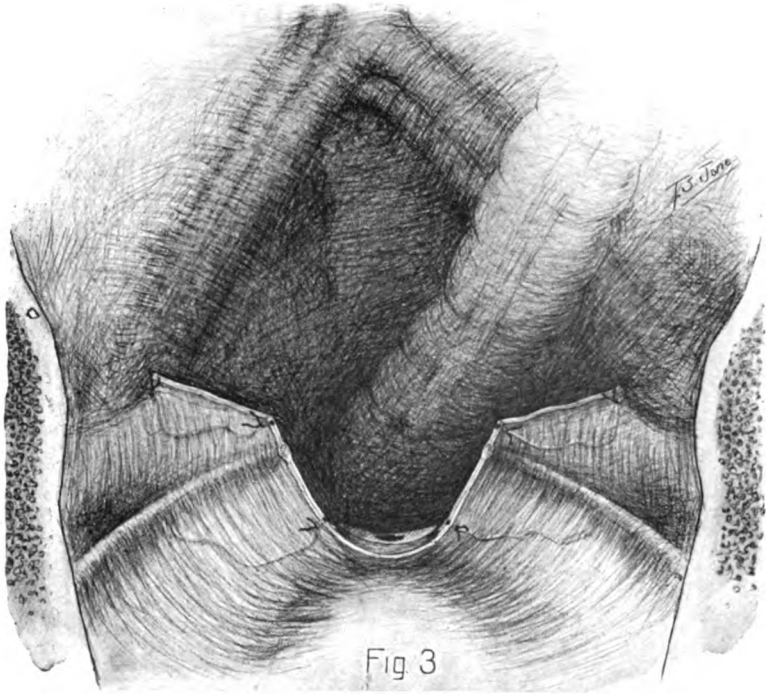

Fig. 3

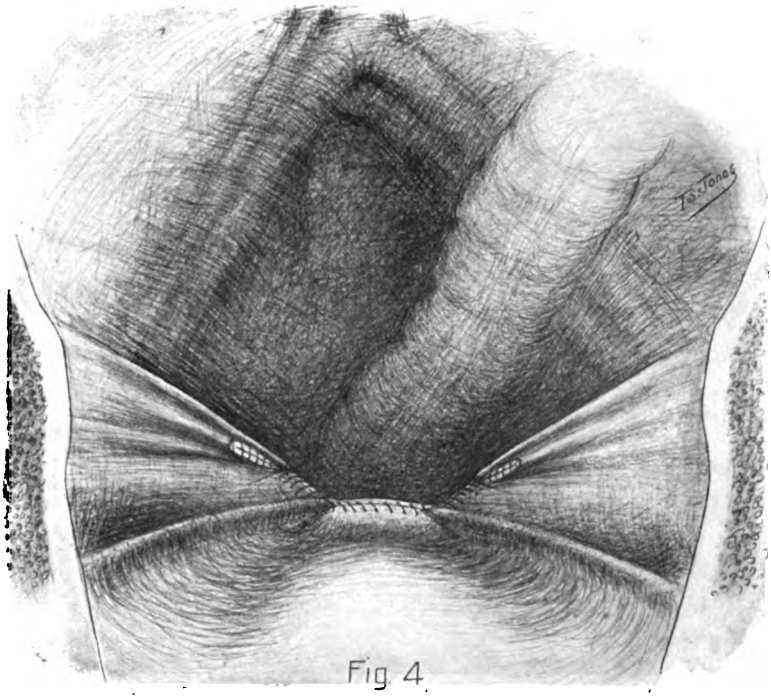

Fig. 4

DORSETT—UTILIZATION OF THE BROAD LIGAMENTS IN SUPRAPUBIC HYSTERECTOMY.

ago, when he modified and developed his operation, that there was no necessity of putting gauze in the cervix, and I have never had any trouble whatsoever from that practice that I am conscious of in any case of vaginal hysterectomy. I reported at our Chicago meeting three years ago a number of cases in which I left the cervix absolutely alone. I believe the more you subject the cervix to dilatation, to the use of gauze, or a tube, or the like, the more you invite infection.

I want to compliment Dr. Dorsett on these beautiful plates, because they illustrate in a splendid way the facility and ease with which the operation can be done. There is no reason why every stump should not be treated that way. I believe, however, the cases are really few where supravaginal hysterectomy is followed by the development of bladder and rectal symptoms. As this plan which Dr. Dorsett has described takes very little time, I have no objection to adding it to the technic. I have not yet made up my mind that it is of advantage to leave the ovaries in these cases. I go away from the meeting of this Association every year with a desire to try some new stunts, providing they appeal to my intelligence, but this idea never has.

Some of you every year speak of the terrible symptoms associated with the artificially produced menopause. I think they would come whether conservative surgery was done in these cases or not. I have not yet made up my mind whether I have not had more mischief subsequently from these cases than when I took out the tubes and ovaries completely. I don't believe it is alone the manufacturing of the secretion which is thrown out by the ovaries that prevents the symptoms in these cases. I believe that these symptoms are often due to and are simply the result of the depressed nervous condition of these patients, who for many months and years were subjected to the irritating and exciting influences of the disease that necessitated the operation. I always try to save ovaries, but I have had many annoying results follow this practice. I have removed part of an ovary and I have operated on the same patient three or four or six months afterward, finding a big hematoma, and I had to take the piece out. You may say it was bad technic. I say no. I removed at the first operation one-half or a section of the ovary and I carefully sewed the tissues together, using fine catgut, and I had no reason to believe that any hemorrhage would take place; yet in two or three months thereafter I had to operate for pain and distress and found a hematoma.

Dr. Edwin Ricketts, Cincinnati.—Pardon me, Mr. President, for saying a word in this connection. One of the speakers, in referring to the freeing of the bladder and pushing it up, gave credit to Dührssen. I want to make a correction—namely, that that operation should be credited to Dr. I. S. Stone of Washington, D. C.

In regard to the symptoms referred to by Dr. Dorsett, such as irritation of the bladder and the like, the question comes up, in those cases in which panhysterectomy has been resorted to and the cervix has been entirely removed, does irritation of the bladder follow? I want to ask Dr. Dorsett, in closing the discussion, to give us his observations on that point. I must say, it has been my experience that when a clean sweep has been made, so to speak, of the uterus, tubes, and ovaries, irritation of the bladder has not ensued in that class of cases as much as it has from the operation that has been referred to here.

Permit me to refer to a case in point, that of a woman, sixty-three years of age, upon whom a panhysterectomy was performed, with the removal of the tubes, ovaries, and cervix, and who, six years afterward, was perfectly well and had never had any symptoms from irritation of the bladder.

DR. JOHN F. ERDMANN, New York.—Speaking of drainage of the cervix with gauze calls to mind a case I had, subsequent to drainage, in the patient of another surgeon. He had done a supravaginal hysterectomy a year and a half before and had placed a piece or two pieces of gauze in the cervix for drainage. When she came to me she was suffering from all the symptoms of a vesical calculus. Upon searching the bladder with a sound, contact was readily observed. Two calcareous masses were removed through the dilated urethra, one being fully one and a half inches long by half an inch in diameter, and the other an inch by half an inch, and upon compression between the finger and thumb it was observed that the calcareous deposit surrounded a piece of gauze in each specimen.

In obtaining the postoperative history from the patient herself of her hysterectomy, she stated that a few days after the operation the abdomen was reopened in the lower portion of her wound and considerable bloody water (?) was evacuated. Her convalescence from the removal of these calcareous covered pieces of gauze was without note.

DR. DORSETT (closing the discussion).—Let me say a word or two in reference to the remarks made by Dr. Bonifield, and which relates to an experience I had in one of these cases in which I had ligated the uterine artery on either side, and then made an attempt to cover up the tissue on either side by drawing this part (illustrating) of the peritoneum together. In doing so I made a needle puncture of the uterine artery, which gave me more trouble than all the remainder of the operation. The uterine artery is stretched during the operation, and when it is ligated it retracts. I dare say, very few of you see the end of the uterine artery when you sew up this flap (referring to illustration), because it contracts. If you isolate it and put a ligature on it, it reacts into the peritoneum. I searched and found it.

As to drainage, I sometimes drain. If I think I have muti-

lated the parts by the use of the angiotribe on the pedicle, which I seldom use now, or if I have bruised the parts, I drain. If I have not, I do not drain. If I drain at all I drain through the cervix. The drain can be placed here (illustrating) and brought out through the cervix, and it is covered by peritoneum; it does no injury at all. You can withdraw the drain on the second or third day.

As to Dr. Hayd's criticism, I will say that the paper I present does not deal with the removal or nonremoval of the ovaries. I only mention the fact that if it is desirable to leave one or both ovaries we can do so.

PRESERVATION OF THE VAULT OF THE VAGINA IN PELVIC OPERATIONS.

BY

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THE greatest comfort that comes to a surgeon, as the result of his work, is the pleasure of realizing that a perfect recovery has been afforded his patient. Does she return to full health, without marked reference to her former sufferings? In my gynecological work I have often been led to consider the three important periods in the life of the female. First, the approaching puberty, when the reproductive organs take on their full functions, and when normal she presents that freedom from all symptoms that point to functional or organic disturbance within the pelvis. This is a time in life when, either from accident or congenital conditions, there may be a morbid pathological state in the form of misplacement of the uterus, a conical cervix, constricted external os, or some other condition tending to ill health. Seeking health she is entitled to be treated in the most careful, intelligent manner. Fortunate is the patient who is relieved at once, whose mind is freed from worry by the fact that she has overcome the conditions that existed, and that she is now well, her freedom from local pains and suffering convincing her of this.

The second important period is after her marriage and the birth of her first child. This brings much anxiety into her life. Fortunate is she who has the care of an intelligent, careful and attentive physician, who conducts her case safely through this first trying period, and leaves her free from actual injury or pathological conditions. To my mind there is no period in the history of the female, when Oliver Wendell Holmes's words, regarding the selection of a family physician, on the part of the young husband and wife, are more truthful and appropriate.

The third, and quite important period, is her care during the menopause. Then comes a time when sad mistakes are so often

made, in the form of lesions that are attributed to this period in life, which, in reality, are indications of the approach of serious disease; when the female needs the kindest and most experienced care regarding the diagnosis of malignant and other growths. She may think it the "change," and she may be sadly in error.

At the period of puberty we have to consider carefully the functions of the ovaries and various malpositions of the uterus more particularly.

At the time of her first confinement we have to consider the possible lesions that may present, notwithstanding the most earnest care on the part of the obstetrician.

Lastly, we should consider carefully the possible morbific changes that come at the time of the menopause.

In operations about the pelvis, two avenues of approach present, namely: through the vagina and by celiotomy. It would be instructive could we have more extended comparisons on the results of the two methods. In opening abscesses, associated with the tubes or not, and drainage through the vault of the vagina; operations upon the cervix, for the relief of cystocele, rectocele, and repair of the perineum are not necessarily considered in connection with the points I wish to bring out in this paper. It is more especially in connection with high amputation of the cervix, vaginal hysterectomy, removal of fibroids, through the vault, and laterally, removal of diseased appendages, and such operations from below; supravaginal hysterectomy, operations upon the tubes and ovaries, fixation of the uterus, or relief of misplacements in such a manner as may seem best to the operator; myomectomies, and other operations from above are the conditions to which I wish to refer in a somewhat brief manner. The patient suffering from any one of these pathological conditions, when consulting her family physician, and later the operating surgeon, seeks freedom from pathological growths and traumatisms, and restoration to health. What can we offer her? Undoubtedly, in her mind, in malignant growths, the removal, and, finally, as the result of the operative intervention, freedom from all previous pains and inconvenience is what she desires. These are the cases where we must sacrifice normal structure, to the extent of being absolutely certain that all diseased tissues have been removed. I am led to emphasize the axiom of practice in the minds of every surgeon,

namely: to preserve normal tissue as much as possible, not only applying this to the abdominal surgeon and gynecologist, but also with great force to operations within the abdominal cavity, and about the vault of the vagina, under no circumstances removing healthy organs. This exception I would make in reference to the appendix. When opening the abdominal cavity for other conditions, and this organ is found anatomically incorrect, I always remove it.

The operation of vaginal hysterectomy for cancer of the uterus, and for nonmalignant conditions, such as a prolapsed uterus, after the menopause, for multiple fibroids, and inflammatory conditions are to be considered very differently from the standpoint of preservation of the vault, also normal anatomical conditions of the vagina. Do our best there must, necessarily, in some cases, be more or less flattening, shortening, and contraction, that quite frequently results in irritable bladder. When the disease is close upon the rectum there will unavoidably be some line of contraction between the bowel and the vagina, in which both the functions of the rectum and bladder will be interfered with. Vaginal operations, far up, on the left side, not infrequently disturb the functions of the sigmoid flexure, resulting in a constant dragging pain, to which patients so often refer, both to their great discomfort and the disappointment of the surgeon. Such results, in this class of operations, cannot always be avoided, and especially when the vagina has been opened from above or below. We have here to remember the rich nerve supply that is given to the pelvic organs, also the interference with the blood relations, such as the return flow of the venous trunks. I am sure that the intelligent patient is entitled to a careful explanation of her case, along these lines. In vaginal hysterectomy, for prolapse, and nonmalignant conditions, we should consider very carefully the conservative side, as in operations from above. We know, and the patient is told, that the operation is to be severe, regarding preservation of tissue and restoration of normal functions. She wants not only the removal of functionless organs, and nonmalignant growths, but freedom from the dragging pelvic pains, pain in the back, as she expresses it, frequently of the bladder, feeling of weight and pressure upon the rectum, often associated with constipation and hemorrhoids, and an unpleasant weight about the perineum. Operations from below for nonmalignant conditions, to relieve adhesions, and at the same time cysto-

cele, rectocele, and the redundant vagina that not infrequently presents, must all be performed in such a manner as to afford as nearly as possible, a normal vault and restoration of a normal vagina.

Operations from above are equally as important. Adhesions, varicose conditions of the pelvic veins and redundant broad ligament tissue should be folded in, and a support—if I may so use the term—provided, by forming some artificial suspensory ligament that will hold the vagina up in a normal position. In panhysterectomy there is a responsibility in the care of the case as between malignant and nonmalignant conditions. In the former we are obliged to keep far away from the uterus, in the latter not so, having here a much better chance to preserve a more normal state of the parts, so far as true functions being restored are concerned. Not to destroy normal tissues and normal functions, in all operations, has, in the past, been greatly to the credit of the general surgeon. This applies, particularly, to operations from below, for treatment of the stump, in supravaginal hysterectomy, for extrauterine pregnancy, for cystocele and tumors of the broad ligament, operations upon the ovaries, particularly the left side, when the rectum is involved, for relief of a misplaced uterus in all its varieties, and by any of the procedures previously mentioned. The fact that there are so many operations suggested and done is a source of careful study on the part of all operators. Exceptions to this simply hold good with the operator who knows his results, and who is not easily moved by the presentation of some new operation, or modification of some old procedure with a new name attached.

In the care of the stump, whatever method is adopted, whether the bringing together of the round ligaments, posteriorly to, or over the surface of the stump, recently covered with peritoneum, folding of the broad ligaments, or doing an anterior attachment to the under surface of the abdominal wall, I believe the one important object in view should be, after bringing the stump well up in position, so as to hold the vault and fornix of the vagina, is to prevent sagging, and especially the dragging upon any of the nerve trunks or large vessels.

I take it that all operations done for removal of fibroids of the uterus are intraperitoneal. I make this remark here according to my observation of the evolution of the operation, and that when we did the old operation of extraperitoneal

hysterectomy, we used the clamp or the Koeberle *serrenœud*, or with sutures attached the stump to the anterior wall of the abdomen. In talking with these patients later I have been impressed with the normal condition of the vault of the vagina and the little complaint made of pressure of the cervix downward, upon the rectum, or, particularly, upon the end of the coccyx that happened to be turned in too far.

The treatment of the other conditions to which I refer should always have in mind this important object, namely: to support and hold up the vault of the vagina, in this way preserving the normal relations to the bladder, rectum, ureters, head of the cecum and anterior portion of the peritoneum. This should apply thoroughly when removing the appendix, especially in inflammatory conditions and adhesions of the right ovary.

I am impressed with the belief that the term "complete removal of everything," as used by patients, is growing less and less frequent, and I am sure this is to their advantage. The tax here made upon her, upon nerve centers, nerve trunks, upon the vascular supply, interference with the lymph channels is enormous, and I am free to say that there are few operations within the pelvis that call for so careful a discrimination on the part of the surgeon as to limiting the extent of the operation, removing, it is true, a great amount of diseased tissue and diseased organs, but not going any farther than is absolutely necessary. When these extensive operations are done we should not promise too much. Such severe wounds require time for recovery on the part of the patient. Nerve lesions follow that leave behind a train of symptoms requiring great patience on behalf of the physician and surgeon, as well as the patient, to overcome. Destruction of tissue that brings about malformation of the vault and outlet of the vagina should always be borne in mind carefully, in regard to interference of functions. Marital relations cannot be overlooked. To a chaste, pure wife it is a source of sorrow and a factor, at times, in the closing chapter in the life of the suicide, not infrequently when the husband, in every way, has lived a virtuous and correct life. In these latter cases the keenest mental agony is known only to her physician. In the cases where the husband goes wrong, how much is impressive in the quiet divorce, leaving the wounded wife to bear in silence her burden of sorrow, and sad thoughts of "what might have been," had the surgeon been

more conservative and she, at the time, less anxious for so radical an operation.

The conditions that sometimes present, after operations in which the vault of the vagina has become much contracted, flattened and shortened, dragging the vaginal walls and implicating the nerve trunks, leave the patient with a constantly increasing irritation and a neuritis that is not easily overcome. Let me refer to the following case:

CASE I.—Mrs. B. B., aged 28 years, married at 17, one child 9 years old; no miscarriages. Confinement said to have been a very tedious and severe one, owing to lack of dilatation on the part of the cervix and outlet of the vagina. Instruments were used and she was very ill some time after delivery. There was quite severe laceration of the cervix and perineum, but the latter not through sphincter ani. Parts did not heal and there was a continuous discharge. Was not able to nurse child. Menstruation presented two months after confinement, and when child was seven months old had, as she stated, a labial abscess, causing her much distress, and when opened drained freely for some time afterwards. When better, repair of cervix and perineum was done, with a satisfactory result. Had severe pelvic pains, however, was unable to get about as hoped for, and a great disappointment to her husband and friends, because of her continued invalidism. After several consultations it was believed that a supravaginal hysterectomy was necessary, and this was done eighteen months after the birth of her child. The wounds seem to have healed well; however, the discharge from the cervix continued, and very annoying to the patient. An operation for removal of the cervix, per vaginum, was advised, and performed three years later. Soon after this she had an attack of appendicitis and submitted to an appendectomy; however, she continued to have pain in the side, and eighteen months after this last operation she began to have marked bladder trouble, with frequent desire to urinate and not a proper sense of relief afforded at micturition.

She was treated for this trouble, having the urethra dilated, at her own home, which afforded her some relief. Had another dilatation done three weeks later, at the hospital where she went. Patient improved some, but at the time I saw her first she was suffering a good deal from a frequent desire to urinate, which she was obliged to do every half or hour, while not quite so often during the night, there being periods when she would go all

night without passing urine. On her first visit at my office her general physical appearance was excellent. Complexion was good, she had a good, firm muscular appearance, yet it was evident the woman was suffering a good deal; she was in a state of mental anxiety, talked about her past operations, what she had undergone, and the possibility of complete restoration to health. On physical examination the perineum found was fully restored, the vagina was shortened, being not more than one and one-half or two inches in length, the vault contracted, and a mere cone outlet was all that remained.

Introducing the sound into the bladder, which passed backward and downward, it was evident that this organ was adherent to the contractions of the vagina, presenting a purse-like condition, and could not be lifted up. Pressure through the wall of the vagina gave her marked pain. Further examination, bimanually, revealed an empty pelvis, and introducing a finger per rectum, one could make out very distinctly the end of the vesical sound through the rectum wall, far back. The case was evidently one of bladder misplacement, with pelvic adhesions from the vagina, from the scar tissue, resulting from the healing of the vagina, undoubtedly following removal of the cervix and causing a sacculated condition. Examination of the urine showed it to be very ammoniacal, specific gravity 1011, reaction decidedly alkaline, no albumin or sugar, with considerable indican present, which was in keeping with her somewhat constipated condition of the bowels. This constipation, of which she complained, carried with it a train of symptoms that we not infrequently see in patients who have undergone quite severe operations about the pelvis; namely, the feeling of inability to expel the contents of the rectum. Microscopical examination of the urine showed quite an amount of bacteria, numerous cylindroids, and agglutinated leucocytes. Evidently she was suffering from some slight retention of urine, and while washing the bladder had done her some good, yet it was to be observed that there was a slight retention when using the catheter.

Here, then, is a case for careful thought and review. Whatever may have been the pathological condition that called for an operation so radical as a supravaginal hysterectomy, and in one so young, the results seem to have been favorable up to the point of discharge that still continued from the cer-

vix. Whether this continued discharge was specific in character I was unable to learn. She, herself, at least, was entirely ignorant of the fact, and being an intelligent woman, noted every point in her case. In talking about it freely and frankly she had no suspicion of such a condition, and her husband's walk in life would hardly bear out any such fact. Could she have been relieved of this discharge, and made a well woman, how fortunate it would have been for her, also if the vault of the vagina could have been preserved, and she relieved of this additional operation. This is the operation that did her the greatest amount of damage. Just here enters into her case the element of operative intervention that possibly left her in a more morbific condition after than before the operation. She now has a troublesome, irritable bladder; she now has a destruction of anatomical relations that leaves her maimed for life, destroys marital relations, and presents the sad side of extensive operative intervention. This woman moralizes a good deal on the stereotyped phrase of having "everything removed," and as to the results.

We have much to be encouraged over in the cases that come to us in the fact that these sweeping operations are growing less and less.

In Case II we have presented the lesions that give a patient considerable distress. To illustrate, let me quote the following:

CASE II.—Miss A. B., aged 30 years, and who presented April 25, 1904, with the history of a somewhat rapidly growing uterine myoma. I had operated a few years since upon a sister for similar trouble, who had made a most excellent recovery. This patient had noticed of late an enlargement of the abdomen, supposed to be due to intestinal gases, and some difficulty in getting a movement of the bowels—presumed to be a case of constipation. Some ten years previously I had operated upon Miss B. for appendicitis, from which she made a fine recovery.

A supravaginal hysterectomy was now done, removing the uterine appendages at the same time. Stump treated with silk sutures, bringing together the peritoneal surfaces. Not very much of the cervix left, it being somewhat shortened, not in a conical or elongated state. The tumor was large, and in tying the ovarian arteries, the vessels of the broad ligaments and uterine arteries, and closing over the peritoneal surfaces, it was noticed that the tissues were somewhat tense, but it

was believed the vault of the vagina was well supported. This patient made a good recovery in every respect, but complains of a weight or pressure upon the rectum. Upon making a physical examination a year after the operation, the cervix could be felt, resting somewhat upon the rectum, but, as a matter of fact, not causing any direct mechanical obstruction, as there was not enough substance to produce weight or impediment to the outlet of the rectum. With the use of cathartics the patient was made comfortable, and yet there was this annoying sensation. In other words, she was not absolutely free from a morbific condition after the operation. I have noticed this complication in a few of my own cases, as well as in some coming to me from other operators.

In rare, but to-be-recognized cases of malignant growths, all organs within the pelvis should be removed. Like malignancy of the urethra, these conditions frequently occur at a time in life when all functions have ceased, and the organs will bear removal to a greater extent than during their period of activity. In malignant growths we have to act courageously. If we do not we may have reason to regret a return of the disease later that might have been avoided. I have noticed, in our operations for supravaginal and suprapubic hysterectomies, as presented in Case I, a tendency to sacculation of the bladder, one of the embarrassing conditions left for the surgeon to overcome, and not by any means easy of accomplishment. We should exercise great caution and study carefully, when leaving the ovaries, as to redundant tissue and adhesions forming that may result in sacculation of the bladder.

ANTERIOR VAGINAL CELIOTOMY: ITS TECHNIC, INDICATIONS AND LIMITATIONS.

BY

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ANTERIOR colpoceliotomy was first recommended theoretically by Sänger in 1888. In 1890 vaginal laparotomy was done occasionally by Dührssen. It was first accidentally performed by him; the peritoneal fold being torn on grasping the anterior wall of the uterus in the course of a vaginal fixation, which at that time was done without opening the vesicouterine fold. The same accident occurred to Zweifel and Fritsch. The operation of vaginal fixation was originally performed through a transverse incision and without opening the peritoneum for the connection of retroversioflexio.

In 1892 Dührssen began to open the peritoneum purposely. After adopting this method, he added to the transverse vaginal incision a longitudinal incision of 2-4 cm., such an incision having been recommended by Zweifel. Küstner was among the first to purposely make a wide incision in the peritoneal fold. In 1893 Dührssen began the regular use of vaginal celiotomy, although up to the end of 1894 anterior colpoceliotomy was mainly practised for the purpose of vaginal fixation and, even then, the opening of the peritoneal fold in the hands of most operators was generally accidental.

In 1893 Dührssen removed a fibroma from the anterior uterine wall by vaginal celiotomy. About the same time he removed the adnexa by this route. In 1894 Martin recommended anterior colpoceliotomy for the enucleation of myomata. In 1895 he advised this method for the removal of adnexa. Among others, Kossmann wrote considerably in favor of anterior vaginal celiotomy. In 1895 Dührssen reported two ectopic gestations removed by the vagina and later recorded the removal of large ovarian cysts and pus tubes. About this time he improved the technic of the operation in order to avoid disturbances in labor following the operation of vaginal fixation.

This consisted in sewing the vesicouterine fold before fixing the uterus. The resulting "sero-serose" peritoneal union prevents dystocia in labor. In 1895 Wertheim reported the enucleation of fibromata by the vaginal route.

Fehling and Peter Müller recommended anterior and posterior colporrhaphy, plus vaginal fixation for the treatment of prolapse of the uterus.

In 1896 Wertheim, Vineberg and others devised vaginal fixation of the round ligaments and shortening of the round ligaments through vaginal celiotomy to avoid the disturbances in labor which had followed some cases of vaginal fixation.

Schauta early adopted the method of vaginal celiotomy for the performance of ovariotomy. He was the first to use the vaginal route for the removal of large cystic tumors of the adnexa, cysts containing from ten to fifteen quarts of fluid He said that ovariotomy is easily done through the vagina if the cyst is movable and pedunculated. Even if only a small part of the cyst surface can be reached, it can readily be punctured by a trocar. The cyst wall thus opened is pulled through the vaginal incision, the pedicle is tied, and the cyst removed. There is room enough for this procedure even with large cysts in which the lower pole of the tumor does not dip down intc the pelvis. In that event, the lower pole can be reached through the peritoneal fold by introducing two fingers into the peritoneal cavity, on which the trocar can be pushed into the cyst, which can then be drawn down after being emptied. Schauta, in his operations, removes dermoid and also multilocular cysts; one cyst after another is emptied by the trochar so that unilocular cysts are not the only ones adapted to this method.

In 1896 Wertheim reported the vaginal extirpation of intraligamentous cysts. Theoretically speaking, it is not necessary to enter the peritoneal cavity. The lower pole of the cyst is exposed through the vagina and emptied by puncture. The cyst wall is then shelled out from its subperitoneal situation. His first case reached to the ensiform cartilage and contained ten quarts. It was remarkable with what ease the cyst was shelled out *in toto* without any bleeding. In this instance the uterus was also removed, because, as is often the case with large intraligamentous cysts, it was pressed flat and misshapen through pressure. His second case was a cystic intraligamentous tumor of the ovary the size of a child's head. It was peeled out as was the first case, but tore in several places where it was

firmly adherent to the peritoneal covering. Its removal was not entirely extraperitoneal.

Chrobak had also removed intraligamentous cysts in this manner and found that it might be advisable to leave *in situ* those parts of the cyst wall which cannot be loosened from the peritoneum and to sew them into the vagina. He remarked also that in abdominal operations it was sometimes necessary to leave behind areas of cyst wall too closely connected with the intestine.

Before this period vaginal hysterectomy for double pyosalpinx, especially with the aid of clamps, was being practised in France and Germany and was brought to a high state of perfection by Landau of Berlin.

Chrobak began vaginal extirpation of myomata in 1892 and by 1896 had done seventy vaginal myomotomies. "It is not always possible," he says, "to say whether the operation can be finished through the vagina. In all cases, preparation for a laparotomy must be made."

Boldt's use of the vaginal route for hysterectomy dates back to 1887. In 1891 he began vaginal operations on a larger scale with a view to studying the merits of that route. He employed the method of vaginal hysterectomy for fibroids and advised the use of the vaginal route wherever possible. He was the first in this country to try vaginal fixation for the correction of retroversion. In 1895 he reported a tubal gestation removed per vaginam. In America Brothers, Montgomery and Ferguson were among the first to enucleate fibromata of the uterus by anterior colpoceliotomy. In 1898 Brothers reported a perforation of the uterus, which was closed during the subsequent performance of an anterior colpoceliotomy for diseased adnexa.

Goffe early adopted the use of the vaginal route. He practises it now in the following conditions. (1) Retroflexion and descent of the uterus, which he treats by shortening of the round ligaments. (2) Retroversions with adhesions, which he treats by shortening the round ligaments. If the adhesions are deep down in the sac of Douglas, he separates these through a posterior vaginal incision. (3) Conservative operations on the adnexa. (4) Pyosalpinx, ectopic gestations, dermoid cysts of the ovary. (5) Myomectomy for small fibroids. (6) Hysterectomy for many cases of fibroids. (7) For the correction of certain cases of sterility (which really comes under class three).

In a publication which appeared in 1899 Dührssen reported

500 operations by anterior vaginal celiotomy and indicated the class of cases in which this method could be used. The indications, exclusive of those for hysterectomy, were, (1) Movable retroflexion and retroversion, (2) fixed retroflexion, (3) inflammations and perforations of the uterus, (4) for benign tumors of the uterus, (5) for diseases of the adnexa, (6) for solid tumors of the ovary, if they are no larger than a fist, (7) for ectopic gestation, (8) for small or even large cystic tumors, (9) for the purpose of producing artificial sterility, by ligating or exsecting parts of the Fallopian tubes, (10) for cystocele, (11) for intraligamentous parovarian cysts, if they are free of the pelvic wall.

Technic of the Method of Anterior Colpoceliotomy.—Among the first to do vaginal celiotomy for other purposes than hysterectomy by the anterior route—namely, through separation of the bladder and incision of the vesicouterine fold of peritoneum, were Mackenrodt and Dührssen, who chose this means of performing what is now known as vaginofixation. The early operations were done mainly through a transverse incision on the anterior wall of the cervix, too little attention being paid to the making of a long longitudinal incision. At a later period Martin and others practised the longitudinal incision alone as a means of separating the bladder and thus entering the peritoneal cavity. Subsequently, Dührssen and others increased the length of the vertical incision which, added to the transverse one, makes the operation of vaginal celiotomy infinitely easier.

Where formerly the vesicouterine fold was pulled down with a forceps by the aid of the guiding fingers, the lengthened vertical incision now made this procedure readily possible with the aid of the eye. Separation of the bladder from the anterior vaginal wall was first practised by the use of the knife and then was done by many with the aid of the scissors, which procedure leaves a very oozing surface. Aside from the incisions themselves, which should be made with scissors, the separation of the bladder from the anterior vaginal wall is readily carried out with the aid of gauze, while the separation of the bladder from the anterior wall of the uterus is readily accomplished with the aid of the fingers. The important element in the successful carrying out of vaginal celiotomy is a long longitudinal incision with a thorough separation of the bladder, especially at its lower lateral attachments to the cervix. A further aid to the successful performance of this operation is the use of specula of proper lengths and widths, with which the cervix may be

pulled far down toward the vulvar outlet or by which the cervix is pushed back in order to bring the fundus forward.

With these specula the bladder is held up out of the way, permitting work upon the vesicouterine fold of peritoneum, and with the insertion of these wide flat specula into the peritoneal cavity the drawing out of even a large uterus is rendered easy and exposure of nonadherent tubes and ovaries is made a relatively simple procedure. The operation should be performed as follows: a short posterior speculum is introduced and firmly pressed against the posterior vaginal wall and the perineum. The cervix is then firmly grasped by two volsella which are best passed through both anterior and posterior lips. By firm, steady traction the cervix is brought as close to the posterior wall of the vulvar outlet as possible. A wide transverse incision is then made with a pair of scissors just below the margin of the bladder, the incision passing well through the mucosa of the vagina down to the wall of the cervix. Two artery forceps are then applied to the upper margin of the incision on either side of the exact median line. A pair of long sharp-pointed scissors then make a slight cut in the vaginal mucosa between the two artery forceps. The lower blade is then introduced under the vaginal mucosa, between it and the attached bladder, and by a series of short cuts the vaginal mucosa is incised for a distance of from two to four and one-half inches, an anterior speculum being introduced to draw the vaginal mucosa of the anterior wall taut if necessary. With the first pair of curved round-ended scissors a slight snip is made between the vaginal mucosa and the bladder at each corner to which the artery forceps is attached. Then, with the aid of gauze alone, the vaginal mucosa being first everted by the artery forceps, the bladder is gradually and carefully separated from the vaginal mucosa throughout the whole length of the longitudinal incision.

The separation of the bladder at the lower transverse incision should be carried on to the lateral margins of the cervix. Higher up the separation need not be carried quite so far laterally, but it should be continued so that the bladder is separated from the anterior vaginal wall for at least one-half inch above the upper point of the longitudinal incision. The artery forceps are then removed and the lower edge of the bladder is separated by the finger from the anterior wall of the cervix until the vesicouterine fold of the peritoneum is reached. This separation of the lower edge of the bladder must generally be begun with scissors in

nulliparæ. Then the fingers should continue to separate the posterior wall of the bladder from the peritoneum which forms its posterior covering and also forms the anterior wall of the vesicouterine pouch. This separation should be carried upward for at least a distance of two to three inches above the base of the vesicouterine cul-de-sac. This separation can be subsequently further increased if desired. A wide speculum of medium length is then introduced beneath the bladder and the bladder is lifted up. This exposes the point at which the peritoneum of the anterior and posterior walls of the vesicouterine cul-de-sac unite. At this point the peritoneum is grasped in the median line with two forceps and is incised with a sharp pointed scissors between them. This incision opens the peritoneal cavity. The incision is extended upward as far as the bladder peritoneum has been loosened, artery forceps being put on at successive stages to bring the peritoneum clearly into the field. At this point, if desired, the bladder may be still further separated and the longitudinal incision further increased. The base of the vesicouterine pouch may be likewise incised transversely, a procedure which is sometimes of aid.

In nulliparæ, after separating the bladder from the cervix, we sometimes find a thick membrane which has to be perforated or cut through before we reach the vesicouterine fold. This membrane should be grasped by two forceps. When it is cut through, we find the smooth, thin vesicouterine fold. If in doubt, the introduction of a sound into the bladder makes the differential distinction from the bladder. It is of advantage to pass a suture at the upper angle of the plica incision and two sutures at the lateral borders of the incision. By this means the peritoneum can be readily brought into view on completion of the operation for the purpose of sewing the incision in the peritoneal fold. A wide speculum of fair length is then introduced through this incision in the vesicouterine peritoneum, when frequently intestine or omentum will present in the field. At this stage the hort posterior retractor is removed and a long posterior reractor is introduced, which serves to push the cervix back and to bring the fundus forward, the volsella being taken off, or else by the aid of the volsella attached to the cervix the cervix is pushed and held back firmly, which also has a tendency to bring the fundus forward. With great care a pair of volsella takes a firm grasp on the anterior uterine wall at the highest

accessible point, which procedure is perhaps best done before the cervix is pushed back. Gentle traction on this volsellum serves to pull the uterus more clearly into view. Volsella are applied regularly at higher points to the anterior wall of the uterus and by gentle traction, by movement from side to side, aided by a slight rotary movement, the fundus is gradually pulled into view and then pulled out into the vagina along the under surface of the wide speculum which was introduced anteriorly into the peritoneal cavity. At this point it becomes evident that a long longitudinal incision in the anterior vaginal wall and a thorough separation of the bladder, especially at its lateral attachment to the cervix, a long incision into the vesico-uterine peritoneum and the introduction into the peritoneal cavity of a wide speculum, are important factors in bringing readily into the vagina a uterus of even large size. Sometimes it is necessary to twist the uterus around so that our horn lies anteriorly and in the middle line. This brings the adnexa more readily into the field of operation. This manipulation is not easy in nulliparæ. Sometimes it is of advantage to pass side retractors into the peritoneal cavity. When the uterus has been drawn into the vagina the space left between its posterior wall and the anterior speculum is a very roomy one, provided the longitudinal incision in the anterior vaginal wall has been a long one, provided the incision into the vesicouterine fold has been a long one, and provided the speculum is wide. The fingers may then be introduced through this space, may palpate the tubes and ovaries, bring them into view, loosen adhesions, draw out small cysts or tumors or enucleate adherent tumors or pus sacs.

It is frequently necessary to have the aid of sponges on holders to keep the intestine and omentum back, which process is made easier by a slight elevation of the lower end of the operating table. If the tubes and ovaries are not readily drawn into view, this may be accomplished by the aid of Cleveland forceps applied at successive points to the tube. Sometimes it is necessary to put a ligature about the tube at the uterine end and in this way gradually pull it out. Sometimes it is necessary to put clamps on in succession to bring the tubes out. If adhesions are present, these must first be loosened by the fingers. With the tubes and ovaries thus freely exposed their removal or conservative operation upon them is, of course, a matter of the greatest ease. The most difficult operation through

the vagina is the removal of adherent adnexa. The peritoneal cavity must be entered by the anterior vaginal route; the adnexa must be loosened and, with the uterus, brought into the vagina; ligatures are then applied and the adnexa removed. It is often necessary to take out all the retractors and go in with two fingers of one hand to loosen the adhesions about the tube and ovary. With this manipulation it is often of great advantage to use the external hand, as in a bimanual examination. Care is necessary not to tear the broad ligament or the mesosalpinx or the ligamentum infundibulo pelvicum, all of which are frequently thickened, brittle, or retracted. They retract and bleed. In passing uterine fixation sutures the anterior speculum should be taken out and the ligatures should be passed through the vaginal wall, vesicouterine, serosa, and uterus. The peritoneum is sewn after the uterus is replaced into the pelvis. There can be no disturbances in labor if the fold is sewn. If the round ligaments are shortened or if they are sewn to the anterior wall of the uterus, or if the round ligaments are fixed to the vaginal wall, closure of the fold is not essential. In the case of small movable cysts removal is a ready procedure. With large cysts puncture by trochar or dressing forceps brings the cyst wall into the field of operation and makes its entrance into the vagina possible, after which deeper adhesions are loosened with the fingers and others with the aid of sight.

Indications.—There are certain disorders of a gynecological nature for the correction of which a vaginal operation should be selected because it offers a better and more certain cure of the condition in question or because such an operation is less dangerous. This is especially the case in the surgical treatment of (1) cystocele, (2) descent of the uterus, (3) in certain cases of prolapse of the uterus, (4) in many cases involving hysterectomy.

Of the various operations which have been devised for the cure of cystocele it may be said that anterior colporrhaphy in very many instances fails to prevent a recurrence of the bladder hernia. A method which has been practised by Goffe and which I have used in several instances consists in separating the bladder from its union to cervix and uterus and from its connection with the anterior vaginal wall and in reefing it or sewing it to the anterior wall of the uterus and broad ligaments. Then a colporrhaphy is added. A better and absolutely more

certain operation is the method of vaginal fixation with or without sewing of the peritoneal plica. By this means the bladder rests on the posterior wall of the uterus, the uterus thus preventing a further protrusion of bladder wall. (See *Medical Record*, Oct. 25, 1902.)

In the treatment of descent of the uterus, especially in those cases in which the uterus is large and heavy, cases in which I believe the Alexander operation not to be sufficient because of the weight of the uterus and because the cervix is not thrown sufficiently far back, the method of vaginal fixation with or without the closing of the peritoneal fold, produces a very safe position for the uterus. This operation is more especially indicated if cystocele is also present. In the various degrees of prolapse of a large uterus, especially in those cases in which the posterior vaginal wall is not too much peeled off from its surrounding connections, the method of vaginal fixation, plus high amputation of the cervix, plus shortening of the posterior vaginal wall, plus a high perineorraphy, offers in many instances a most suitable means of correction. Vaginal hysterectomy is, in my opinion, the ideal operation in cases of incurable hemorrhage from any cause except carcinoma, in cases of fibrosis or in chronic inflammation of the uterus with posterior parametritis whether the adnexa are to be removed or not. The operation can be done with or without clamps and with or without splitting of the uterus. In cases of double pyosalpinx with chronically inflamed uterus, when indicated, vaginal hysterectomy offers a relatively better surgical procedure than the abdominal operation. Whether the uterus be brought into the vagina and one side ligated or clamped from its ligament, or whether the uterus is split in two, we obtain in this manner an easy means of pulling on the broad ligaments, passing the fingers along their posterior wall and enucleating pus tubes and ovaries with greater ease and a minimum amount of danger. In addition there is a choice as to whether we are to sew the peritoneum and vaginal walls as a completed operation, whether we are to pack entirely with gauze and then drain thoroughly, or whether by partial closure we drain by inserted strips of gauze. The mortality by this procedure should certainly be better than with the abdominal method.

Vaginal hysterectomy in the case of small fibroids is certainly a satisfactory operation, by whichever of the methods described it is done. In the case of large myomata the practice of

morcellement often permits of the removal of extremely large fibroid tumors and is a method which can often be used to advantage, unless we are dealing with fibroids which are partially intraligamentous. For those who practice supravaginal hysterectomy, of course, the abdominal route furnishes a ready means for the removal of large fibroid uteri. I believe, however, that the removal of the cervix is indicated in these cases. Abdominal hysterectomy is then often a difficult operation. The cervix is often very long and the danger of injury to the bladder and especially to the ureters is very great. For that reason in doing a complete hysterectomy in the severer cases, I think it sometimes advisable to begin the operation vaginally, separating the bladder, opening the cul-de-sac of Douglas, and ligating laterally to the cervix, up to and including the uterine arteries. The remainder of the operation is then completed with much greater ease through the abdomen. This same procedure I believe to be the ideal one in early operations on carcinoma of the fundus uteri, in which cases infiltration of the ligamentum cardinale is generally absent.

Vaginal celiotomy is used very extensively for the correction of movable retroflexion and retroversion with normal adnexa. The methods used are vaginal fixation, shortening of the round ligaments, vaginal fixation of the round ligaments, fixation of the round ligaments to the anterior wall of the uterus. This method of approach comes into competition with the Alexander-Adams operation and with the various abdominal operations of shortening the round ligaments, fixing the round ligaments, shortening the uterosacral ligaments, fastening the round ligaments to the anterior wall of the uterus, and ventral suspension and fixation. In my opinion, the Alexander operation meets all indications for movable retroversion and flexion with normal adnexa, except perhaps when the uterus is large or descended or in retrodisplacement due to posterior parametritis or in the case of congenital retroflexion with long uterus and short anterior vaginal wall. A selection from these various methods, whether by the abdomen or vagina, is one of choice. It may be said, however, that vaginal celiotomy has an advantage over the Alexander operation in that it permits of desired exploration and is readily carried out in innumerable instances where an abdominal incision does not seem warranted because of insufficiently marked abdominal and pelvic symptoms or when there is absolute refusal on the part of a patient to submit to such an

ordeal in cases with sufficient indications. The mortality by these various methods is probably about the same. An important difference concerns the subsequent difficulties which may be encountered in labor and the element of recurrence of the displacement. In avoiding difficulty in labor I believe that ventral suspension of the anterior uterine wall or ventral fixation of the round ligaments meet the indications even in cases of large uteri with descent, if the abdominal wall is not too lax, and more particularly if there is retrodisplacement due to posterior parametritis and in cases of long uterus and short anterior vaginal wall with congenital retroflexion. The danger of dystocia in labor is slight. Objection is made to vaginal fixation because of the possibility of difficulties in labor. It may be said that if the peritoneal fold be sewn so that a suspension and not a fixation is done, the element of danger in labor is almost eliminated. With vaginal shortening of the round ligaments, with vaginal fixation of the round ligaments to the anterior wall of the uterus, dystocia in labor is out of the question. Therefore the selection of the method is one of individual choice and there is certainly no unanimity on this question.

In fixed retroflexion and retroversion and in retroflexion with diseased adnexa, especially when adhesions are present, the correction of the uterine dislocation is of secondary importance. The disease of the adnexa and the peritoneal condition is the element of importance.

Here, and in all other diseases and pathological conditions of the tubes and ovaries, the choice between abdominal and vaginal routes for conservative or radical operation on the adnexa must take into consideration the size and location of the tumors, the element of adhesions, the necessity for haste, and the question of advantages and mortality.

The advantages, according to Dührssen are, (1) the absence of an abdominal scar; freedom from the danger of hernia or fistula; freedom from the possibility of painful adhesions of the omentum or intestine; freedom from the use of an abdominal binder, (2) few subjective annoyances immediately after the operation, (3) a rapid convalescence and rapid restoration to health and ability to work, (4) a low mortality.

The great claim made for the vaginal method is that it is less dangerous and that the statistics as regards mortality are better. It is a question whether this claim can be substantiated to the degree claimed by its adherents.

According to Bürger, the rate of mortality for abdominal ovariotomy varies between 4 and 10 per cent., though Pean reports a mortality of only 2 per cent. Hofmeier, in reviewing 4,875 ovariotomies by twelve different operators finds the mortality to be 13 per cent. Bürger reports from the Clinic of Schauta a mortality of 9.55 per cent. in 394 ovariotomies. Of the 32 deaths Bürger takes out 23, which he says are not in direct and immediate connection with the operation, making the mortality figured on this basis, 2.68 per cent. Abel, in reviewing these statistics, says that, instead of 9 deaths, 22 are in direct connection with the operation. He finds among the cases excluded by Bürger 5 cases of sepsis in which bacteria were present before the operation; 1 case of pneumonia; 1 case of pneumonia after a second operation for intestinal obstruction, 1 pneumonia after a case of carcinoma; 1 pneumonia following a twisted pedicle operation; 1 pneumonia after a purulent cyst; 1 gangrene of the lung following operation for twisted pedicle; three deaths from weak heart and fatty heart; 2 deaths from emboli of the lung, 1 death from intestinal obstruction and hydronephrosis due to ligating a ureter. It can be seen that these cases include sequelæ which may follow the vaginal quite as well as the abdominal method. Abel says that Bürger's report shows the abdominal operation to be dangerous through sepsis, ileus, heart collapse, lung affections, emboli, and internal hemorrhage. Since he considers many lung complications, emboli and ileus due to intestinal paralysis as evidences of sepsis, he finds that abdominal operations are not free from danger. It can thus be seen how differently statistics are viewed according to the bias of the observer. That the character of the cases operated on is of vast importance, is shown by the fact that Schauta in 60 complicated vaginal ovariotomies was compelled in 19 cases to remove the uterus. His mortality was 5 per cent. In 41 uncomplicated vaginal ovariotomies his mortality was nil.

Abel, by the abdominal route, operated on 45 cases of ovarian tumor (25 single, 20 double), of which 11 were dermoids. There were two deaths; one a dermoid removed in twelve minutes without rupture, in which case death occurred from sepsis probably due to accidental infection; the other a double ovarian carcinoma with ascites and peritonitis.

Eleven ectopic gestation sacs were removed abdominally with no death. He also performed 65 abdominal operations

for inflamed adnexa of which 44 were double and 21 single; in 12 of which pus flowed out; 3 of these 12 died. Of his 6 deaths, among these 65 cases, one was a case of double pyosalpinx operated for the second time on the third day for intestinal obstruction. The second death was a case of double pyosalpinx, with temperature and peritonitis at the time of operation. In the third instance, a case of double pyosalpinx, the intestine was torn. A second operation showed blood oozing from the stump and from the intestinal wall. Very severe adhesions were encountered in the fourth case of pyosalpinx, complicated by a left cystoma. The patient died on the seventh day from a purulent bronchopneumonia, which Abel attributes to the use of ether. The fifth case was an ovarian abscess in the puerperium with adhesions and peritonitis. The sixth death was a double pyosalpinx with severe adhesions in which there was marked hemorrhage from the intestinal wall. Abel explains these deaths by saying that the operations were performed early in his experience, and that some of them were cases which should not have been operated so early. In spite of the fact that he probably uses better judgment to-day in selecting the time for operation he says that vaginal operations are less dangerous.

A comparison of the cases operated by him vaginally and abdominally shows this difference. Of these 65 inflammatory abdominal cases, 53 were instances of pyosalpinx, 4 of ovarian abscess, 8 were tuboovarian tumors or salpingo-oophoritis. By the vaginal route he operated on 33 cases for inflammatory tumors of the adnexa without removal of the uterus, and on 31 cases of inflammatory tumors of the adnexa with removal of the uterus, with two deaths. A study of the 33 cases of inflammatory tumors without removal of the uterus shows that only 9 were pyosalpinx, 9 were tuboovarian tumors, 6 were cases of salpingo-oophoritis, 3 were cases of hematosalpinx and 1 a hydrosalpinx. These certainly represent a much less severe form of disease than the ones operated by the abdominal route. In the more severe cases of inflammatory diseased adnexa, 31 in number, the uterus was removed, a step of great advantage. His statistics concerning vaginal operations include 42 cases of retroflexion of the uterus with no mortality, 10 cases of ovarian tumors, 1 ectopic gestation, 4 hysterectomies for prolapse of the uterus, and these 64 cases of inflamed adnexa, giving him the very low mortality of 1.66 per cent. for 121 operations as

compared with a mortality of 6.6 per cent. for 121 abdominal operations. Not only were the reported abdominal operations done early in his surgical experience, but they were of a much more severe nature than those done vaginally, and among them were cases operated on during the stage of acute inflammation, cases which his maturer experience would lead him to operate radically at a later period. When we take into consideration that the vaginal operations include 42 cases of retroflexion, that the inflammatory tumors of the adnexa were not of severe grade, that the severe cases of pyosalpinx gave a much better prognosis because the uterus was also removed, we see how unfair the comparison is. As mentioned above, Schauta in 60 vaginal complicated ovariotomies had a mortality of 5 per cent., whereas in 41 cases of uncomplicated unilateral vaginal ovariotomies his mortality was nil.

Dührssen in the publication of his first 500 cases of vaginal celiotomy, reports 15 deaths, a mortality of 3 per cent. It must be mentioned, however, that 400 of these cases represented the operation of vaginal fixation, among which in only 80 cases one or both tubes or ovaries were removed. Of these 80 cases only 8 were pyosalpinx, 5 were ectopics, the rest were cystic ovaries, hydrosalpinx, oophoritis, perisalpingitis, and hematosalpinx. Of these 400 cases 6 died, 1.5 per cent. Seventy-three (73) operations were performed for diseased adnexa, cases of a more severe nature, with the uterus anteflexed. Of these 5 died. Among all his cases, in 33 instances he enucleated myomata from the uterus. The two deaths among these 33 were due to the operations on the adnexa. Thirteen (13) cases of ectopic gestation showed one death. In addition, 16 cases were begun vaginally which had to be completed by a vaginal hysterectomy or by an abdominal laparotomy, with two deaths. If we exclude the 400 cases of vaginal fixation the vast majority of which (320) were done primarily for the retroflexion alone, we have 104 cases, with 8 deaths. It can therefore be seen that the severity of the cases and the manner in which the statistics are compiled have a decided bearing on the reported mortality.

In spite of all this, it is earnestly claimed that such operations as may, with relative freedom from marked adhesions, and even in cases with marked adhesions, be done through the vagina, show a mortality in all probability somewhat lower than cases operated upon by the abdominal route.

Limitations.—Dührssen stated in 1899 that the conditions essential to the ready performance of a vaginal celiotomy were: (1) the uterus must be one that can be well pulled down; (2) tumors must not be larger than a fist; (3) extensive internal adhesions, especially with intraligamentous or pseudo intraligamentous tumors, must be absent.

Dührssen further said that in diseases of the adnexa vaginal celiotomy was contraindicated (1) with severe perimetritic adhesions high up or when the tube and ovaries are not palpable in inflammatory conditions, this meaning that they are probably deeply or laterally fixed or covered by adhesions of intestine, omentum or sigmoid, (2) in chronic oophoritis, or perioophoritis, where the ovary is adherent close to the lateral pelvic wall; (3) in large tumors of the adnexa closely adherent to the lateral pelvic wall; these are frequently the so-called tuboovarian tumors; (4) if tumors of the adnexa are situated high up toward the abdominal cavity or situated anteriorly and united to the bladder, or if there is tuberculosis of the tubes. In the latter cases there are many adhesions to the intestine and bladder, there is a very thick brittle mesosalpinx, there is a short ligamentum suspensorium ovarii.

Continued practice and experience have led Dührssen to extend the limitations of the vaginal method so that he finds vaginal celiotomy indicated even in many cases included under the above four headings. Personally, I believe the contraindications quoted above are legitimately founded. However, the following views of Abel and Schauta show to what extent the vaginal method is practised and the statement of Chrobak shows how thoughtfully the problem of choice should be considered.

Abel acknowledges that abdominal operations are easier than vaginal, and states that his early objection to the vaginal route was due to the fact that he did not understand the method. The conditions in which there is a choice between the vaginal and abdominal route in his opinion come under the heading of (1) displacements of the uterus, (2) tumors of the ovary, (3) inflammatory tubal conditions, (4) tuboovarian inflammations, (5) tubal gestations, (6) myomata. He believes that all ovarian tumors should be removed through the vagina, except very large cystic tumors, large solid tumors and carcinomatous tumors of the ovary. Intraligamentous tumors and tumors with twisted pedicles, which Bürger says should be done through

the abdomen, Abel does through the vagina. For Abel, adhesions are no contraindication. They must be extremely extensive, he says, to furnish an obstacle which cannot be overcome by the vaginal route. Size is no obstacle so long as the ovarian tumors are cystic, says Abel. He finds the removal of small cystic tumors to be without danger. The vaginal operation for larger and complicated cystic tumors is less dangerous and the same holds good in the case of dermoid cysts. He advises the abdominal method only for exceptionally large cystic tumors, for large solid tumors, and for carcinomatous growths of the ovary. He further says, "He who can control the vaginal method to the greatest possible degree can, by *morcellement* vaginally remove fibroid tumors which are scarcely considered possible." "It is not right to say that only myomata which extend to the umbilicus should be attacked vaginally and that larger tumors should be removed abdominally. This depends upon the size of the vagina, the motility of the tumor, and the skill of the operator. There is no doubt that the vaginal operation, even if it lasts longer because of a protracted *morcellement*, constitutes a much less dangerous attack than the abdominal operation."

Schauta says, "It is self-evident that the vaginal operation demands greater skill and experience than the abdominal." He is continually astonished how simple abdominal laparotomy now seems to him in comparison with the vaginal operation. "It is natural that every operator should begin with laparotomy and then adopt the vaginal mode of operation. The reverse is scarcely possible. This is mainly the case because, without doubt, the vaginal operation gives better statistics than laparotomy and because it shows a smaller mortality. One can readily claim that an operation according to the vaginal method is also less dangerous than the same operation, by means of laparotomy. We must always compare the same operations. That injuries also occur in laparotomy is an old story." With Schauta injuries occurred formerly more frequently with laparotomy than now by the vaginal method. "In the latter, injuries to the ureter or the bladder occur less frequently than with laparotomy. That in the latter, too, intestinal injuries may occur without being recognized is well known. These are not always major injuries; often they are not to be recognized; the serous covering is simply gone at a certain point. Injury to the intestine by the vaginal method is less dangerous than with

laparotomy. In the former, intestinal contents follow a shorter path in their exit than in laparotomy. The vaginal mode of operation should not be considered in a spirit of enthusiasm, but calmly and coolly. Wherever an operation can be carried out vaginally, it should always be done by this method. However, everything must be prepared for a laparotomy. That one should promise a patient to positively and surely complete an operation by the vaginal method, is evidently out of the question. He must always in all cases leave himself free, to change the work and method of operation, even during the operation, in case this prove to be necessary."

Chrobak in 1894 wrote warmly in favor of the vaginal extirpation of myomata. "The vaginal operation since then has been used very much for other conditions. It was believed that the vaginal operation was better because the lower part of the peritoneum absorbed infectious materials less, or because the outflow of infectious stuffs was assured. Still, it is not always possible to say whether the operation can be finished through the vagina. In all cases preparations for a laparotomy must be made." Chrobak at the time of this discussion, 1896, had done 70 vaginal myomotomies. The first were done in 1892. Of the first 9 three died; then came a series of 56 without a death, and among the last there were two deaths which illustrate the dangers of the method. One was due to an infection from a gangrenous myoma, the second was due to unrecognized injury to the intestine. It was impossible in this case to enter into the sac of Douglas because everything was united by adhesions with the surroundings and intestine. Chrobak had often injured the intestine in laparotomy and all cases but one recovered after sewing of the injured area.

Chrobak considers an injury to the intestine in laparotomy less serious than with a vaginal operation, since in the latter it may not be observed at all, as the case mentioned above.

Indications and Limitations.—In fixing for oneself the indications and limitations for the more extended practice of vaginal celiotomy it is necessary to make a comparison between the relative advantages and disadvantages of vaginal celiotomy as compared with abdominal laparotomy.

The vaginal operation is more difficult, takes longer, but there is less danger from air infection. The vagina, for practical purposes, can be rendered as sterile as the abdominal wall. The operation through the vaginal vault is slower, but involves

less manipulation of the intestines and consequently less shock. Though intestine and omentum present in the wound, nevertheless by lifting the table or by the use of gauze sponges they can be kept out of the field of operation. Deep adhesions can be loosened by the sense of touch, but denuded areas of pelvic peritoneum and intestinal peritoneum cannot be observed. Vaginal celiotomy is not an operation performed in the dark, for the uterus is brought out into the vagina and whatever is to be removed must likewise first be brought into the vagina so that all ligation and cutting is done with the aid of sight. Patients make a quick convalescence after vaginal celiotomy. They do not worry about a scar. There is no danger of hernia. Many patients yield to a vaginal operation who would absolutely refuse an abdominal incision. If pus is poured out in the course of an operation it is said that it flows out more readily when the vaginal route is used, and that there is less danger of infection.

The abdominal operation is easier. It can be more quickly performed. Adhesions of the intestine and omentum may be freed with the aid of sight. The deeper adhesions of the adnexa, of the uterus, or of adherent tumors, must, of course, be freed by the fingers alone, but even here the eye enables us to see rough denuded areas of the peritoneum, to see the exit of pus and to *note the character of the intestinal wall when freed from adhesions*, a point of greatest importance. In addition, the abdominal route enables us to observe the appendix and to remove it when affected, or to remove it as a routine procedure. It may be said that, with proper protection of the intestines by the abdominal route and with the careful use of sponges, the danger from infection in these cases should be no greater than when operating through the vagina. Recovery after operation is not so very slow, for Boldt permits his patients, even after the most severe abdominal operations, to sit up and walk about very early. His records to date show about 300 cases upon whom abdominal section had been done, whom he allowed and induced to leave their bed at intervals varying from twelve hours to three days after operation. These are not selected cases, but include all consecutive patients unless a contraindication was found. The abdominal bandage used, which is original with Boldt, amply protects the abdominal wound.

Comparing, then, the advantages of the two methods, it

may be said that hernia after an abdominal operation is certainly a possibility, even though it happens only after an infection of the wound, a disturbance which may occur in spite of the greatest care. The advantages of the vaginal method are: that the patients suffer less from shock, that there is no danger of hernia, and that patients will consent to the operation more readily. Other things being equal, these advantages are of some weight, but the all-important questions are whether in cases of tumors and conditions associated with marked adhesions the vaginal route should be chosen, and whether in the severer cases the mortality rate is lower.

These are the questions which are of importance from the surgical standpoint. Since no statistics properly compiled definitely prove the vaginal method by theory or results to give a markedly better mortality in severer cases (except, perhaps, hysterectomy), the adoption of this method for extended practice depends on individual reason and experience. Dührssen fixed certain contraindications,. and to-day uses the vaginal method for 80 per cent. of his cases (but a large proportion of these are uterine displacements). For Schauta, many of these contraindications have no weight. He says, as quoted above, "It is natural that every operator should begin with laparotomy and then adopt the vaginal mode of operation."

For Abel, as is seen, there are few contraindications, yet here is a man who, after practising the abdominal method, goes over to the vaginal procedure and uses it almost exclusively. At the present time Boldt expresses the following opinions concerning the vaginal method.

(1) "The indication for vaginal celiotomy for me is when I desire to completely remove the uterus and wish, if necessary, to do likewise with the adnexa. This is an indication for various forms of inflammation. I have no use at all for operations that I have seen on small cystic degenerations of the ovaries or the tinkering on Fallopian tubes that are practically normal."

(2) "In myomata, the neoplasm must give rise to sufficiently intense symptoms to require removal. It should not exceed a size larger than to permit its easy compression into the true pelvis, and the vagina should be sufficiently roomy and its outlet sufficiently relaxed to permit of operation without perivaginal incisions unless the patient be very obese. Then, I prefer to do a vaginal operation even with perivaginal incisions, because of the greater liability in obese patients to suppuration

of the abdominal wound and the consequent greater risk of future ventral hernia."

(3) "Occasionally with simple ovarian cysts and parovarian cysts the vaginal route is chosen, if I can with reasonable certainty make the diagnosis. The vaginal route is never used by me for dermoid cysts when that diagnosis is made."

"In instances of severe pelvic inflammation, especially if I diagnose the probable presence of pus foci, when I think that conservative surgery may be resorted to, I prefer the abdominal route."

"For displacements of the uterus I do not favor the vaginal route. Least of all do I chose the vaginal route for ectopic gestation, except in instances of encapsulated hematocele, and even in some such cases experience has taught me that in all probability many such patients would have made a more rapid convalescence and would have been spared the painful ordeal of vaginal dressings, had I resorted to the abdominal route." (Boldt).

Statistics of operations by the vaginal method, when viewed in gross, are better because very many cases are included which are done by some by the Alexander-Adams operation, or which are not considered sufficiently severe by others to justify an abdominal operation. Therefore, the vaginal method is often practised where patients would refuse abdominal incision.

For me the great contraindication is furnished by adhesions. If the tube or ovary or the uterus be fixed we never know the extent of the adhesions. Among the cases cited several illustrated an extent of union of uterus and adnexa to sigmoid, rectum, etc., which was of so marked a character that when the adhesions were separated, rough denuded areas of peritoneum were produced, all of which demanded and received surgical correction.

Since July 1, 1905, I have noted in my records the details of each operation, and in each instance the reason for the selection of the particular route. The conditions met with in almost all cases justified the choice from the standpoint of certainty and care and the best interests of the patient, and they furnish a verification of the indications and contraindications as set down.

Of these 100 cases, 58 are abdominal, 35 are vaginal and 7 are instances of the Alexander-Adams operation. The abdominal cases include: Pyosalpinx, 9 double and 1 single and 1 acute.

In all but the last, ventral fixation was also done. Ovarian cysts, 10; 2 were papillomata and 2 were in pregnant patients, one of these being a twisted pedicle. Tuboovarian cysts (pseudo-intraligamentous), 2. Intraligamentous cysts, 2, one reaching to the umbilicus. Dermoid cysts, 2, both with marked adhesions. Tuboovarian tumor situated antero-laterally to the uterus, 1. Salpingo-oophoritis, 9, 5 double and 4 single. In the former (double salpingo-oophorectomy), ventral fixation was also done; in the latter (unilateral salpingo-oophorectomy), ventral suspension or shortening of the round ligaments. Salpingo-oophoritis combined with appendicitis, 1. Ectopic gestation, 9, of which all but 1 were tubal abortion or tubal rupture. Intraligamentous ectopic gestation, 1; tumor reached to the umbilicus. Fibroid, supravaginal hysterectomy, 2; 1 done supravaginally because of extreme need for haste in a patient with cardiac irregularity; the other done abdominally because of the original desire to perform myomectomy if possible. This tumor was situated anterior to the uterus and myomectomy by the vagina would not have been possible. Fibroid, combined vaginal and abdominal hysterectomy, 2. Carcinoma of the fundus uteri, combined vaginal and abdominal hysterectomy, 1. Gonorrheal peritonitis, appendicitis suspected, 2. Retroflexion of the gravid uterus, 1; shortening of the round ligaments was done. Ventral suspension for congenital retroflexion with short anterior vaginal wall, 2.

The vaginal method was selected for the following cases: Hysterectomy, for chronic metritis with hemorrhage; for arteriosclerosis of the uterine vessels,-for suspected carcinoma, and for submucous fibroid, 11. Hysterectomy for total prolapse, 2. For dermoid cyst of the ovary free of adhesions, 1. Ectopic gestation, exploratory celiotomy, 1. Retroflexio-versio with marked descent of the uterus, 5. Retroflexio-versio with marked descent of the uterus plus cystocele, 3. For cystocele, 3. Retroflexio-versio, exploration desired because of sterility, 4. Salpingo-oophoritis with no marked adhesions, 3. Total prolapse of the uterus, 2.

Ventral fixation is always practised by me in the case of double salpingo-oophorectomy, in order that the uterus may be kept up well away from all possible adhesions. I have also used this method, but unsuccessfully, in two cases of total prolapse of the uterus; the prolapse in one instance recurring entirely, in the other instance the cervix extending down to the perineum. Usually the

operation of choice for total prolapse of the uterus in my hands was hysterectomy, with a wide excision of the vaginal walls and the fixing of the broad ligament stumps to the median and lateral borders of the vaginal wound at the lowest possible point. While the results have been satisfactory, I believe that in cases with large uterus the method of vaginal fixation, with high amputation of the cervix plus perineorrhaphy, offers a very favorable alternative.

Conclusions.—Vaginal celiotomy is either primary and done as a celiotomy for the purpose of performing an intraperitoneal operation, or else it is simply a step in the performance of an operation, as in the case of vaginal fixation for cystocele, etc. We are concerned in the selection of this route not so much with what can be accomplished through the vagina, but with what in our hands may be done well, safely, and with advantage to the patient and with benefits superior to those offered by abdominal laparotomy. The indications which I have made for myself are the result of observation and study modified by the test of actual experience. They are not given with any other purpose than to express a personal conviction with the feeling that the reason for every choice is founded on the result of practical tests. One point is to be made clear and that is that vaginal celiotomy is not so difficult in multiparæ with roomy vagina, when the cervix can be pulled far down toward the perineum, and it is in these cases mostly that the following indications are met. For me, the indications for the use of vaginal celiotomy are:

(1) Vaginal celiotomy *may* be used as a matter of choice for movable retroflexion or retroversion of the uterus without marked descent, to be corrected either by vaginal suspension of the uterus, vaginal fixation of the uterus, vaginal shortening of the round ligaments, vaginal fixation of the round ligaments or fixation of the round ligaments to the anterior wall of the uterus. An Alexander-Adams operation, however, meets all indications unless we are dealing with pathological ovaries, tubal disease or peritoneal adhesions or other pathological intraperitoneal involvements. With disease of the appendix, or if the retroflexion, retroversion or retrodisplacement is due to parametritis involving the uterosacral- ligaments or if we are dealing with congenital retroflexion with long uterus and short anterior vaginal wall an abdominal operation is advisable.

(2) For descent of the uterus, if we are dealing with a large,

heavy organ, especially if the patient is very fat or if abdominal walls are very lax, to be corrected by vaginal suspension or fixation.

(3) For the correction of cystocele, with or without uterine displacements, to be treated by the method of vaginal suspension or vaginal fixation.

(4) Prolapse of a large, heavy uterus, in many instances. A high amputation of the cervix and a high perineorrhaphy are also essential in addition to a thorough vaginal fixation.

(5) Exploratory celiotomy for nontangible pelvic conditions, as sterility, or suspected ectopic gestation.

(6) Conservative or minor operations on the adnexa, with only slight or cobweb adhesions, especially if at the same time retroflexion or retroversion plus descent or cystocele furnish an indication for vaginal suspension or fixation.

(7) For the production of artificial sterility, by exsection of part of the tubes.

(8) For the removal of small movable tumors of the ovary or tube.

(9) Small fibroids of the uterus, suitable for myomectomy.

(10) *a*. Hysterectomy for uterine diseases, if the uterus is not too large and if it is not essential, as in carcinoma of the cervix, to remove an unusually wide area of the broad ligaments, etc., and if there is no danger, as in certain cases of myoma, of opening a degenerating fibroid. *b*. Hysterectomy for double pyosalpinx, when we have reason for removing a chronically inflamed uterus.

The choice of the vaginal operation is debatable,

(1) In certain cases of ectopic gestation. This operation is, in my opinion, permissible if we are not dealing with tubal abortion or tubal rupture; if there is no actual active hemorrhage going on and if there is no hematocele. In this operation, where cases are so often diagnosed after the symptoms of intraperitoneal hemorrhage make themselves evident, haste is certainly a most essential element, and for that reason an abdominal operation is indicated in almost all cases. Dührssen, however, employs vaginal celiotomy for 70 per cent. of his cases of ectopic gestation.

(2) Not too large movable cystic tumors. The mortality in the abdominal treatment of movable cystic tumors of whatever size is so slight that the argument of better mortality can scarcely be made. Besides, in the case of multilocular tumors time

must be taken up with the successive opening of the various cysts and what seems to be a totally unnecessary procedure is adopted when using the vaginal route.

Vaginal celiotomy is contraindicated for me in the following instances. These naturally include all the conditions not mentioned above, but inasmuch as the element of situation, size, adhesions, and danger of injury to the bladder, uterus, and intestine, furnish the basis for the contraindications an enumeration of the various contraindications shows the logic for this grouping.

(1) *a*. In the presence of a pregnant uterus. *b*. Shortly after labor or abortion, except in the possible event of hysterectomy.

(2) If a previous vaginal celiotomy or separation of the bladder has been done.

(3) If the appendix is involved, as not infrequently happens with right-sided tuboovarian conditions.

(4) If the gall-bladder or other intraabdominal organs are to be explored.

(5) *a*. Nulliparæ or multiparæ with such a small vagina that it is necessary to incise the perineum. *b*. Nulliparæ in whom the anterior fornix is of such small curve as to not permit of a long incision or in cases where the cervix cannot readily be brought down to the perineum.

(6) Tumors fixed anterolaterally to the uterus, which situation makes it difficult to bring the uterus into the vagina. An essential in the removal of structures by vaginal celiotomy is the ability to bring the uterus into the vagina so that then by various manipulations the tube ovary or tumor may be enucleated and brought into view.

(7) In instances where injury to the uterus in inflammatory diseases may cause extension to the other side. I think the vaginal operation is founded on a poor basis in the case of one-sided pyosalpinx or salpingitis, for the manipulation through which the uterus goes in the performance of a vaginal celiotomy is such that its structure to a certain extent is invaded and the probability of stirring up a recrudescence of the original active or latent infection and thus transmitting it to the nonaffected side is great. Therefore an abdominal operation is better, unless we are dealing with a double pyosalpinx and chronic metritis, in which case a complete hysterectomy, preferably vaginal, is indicated.

(8) Tubes, ovaries, or tumors fixed far to the lateral wall of

the pelvis, including double pyosalpinx unless hysterectomy is to be done.

(9) A uterus fixed by adhesions to the posterior pelvic wall or to the sigmoid or rectum.

(10) Tumors fixed posteriorly to the uterus.

(11) Ovarian tumors with twisted pedicles.

(12) Large ovarian tumors, especially if adherent.

(13) Large solid ovarian tumors.

(14) Dermoid tumors of the ovary, especially if fixed.

(15) Intraligamentous tumors and intraligamentous hematomata.

(16) Most cases of ectopic gestation.

(17) Large irregular fibroids of the uterus, especially those with intraligamentous extension. *Morcellement* is a dangerous procedure in the case of degenerating or necrotic tumors. In my opinion the best method for the treatment of large fibroids is the combination of the vaginal and abdominal routes, if we believe in the removal of the cervix.

THE DIFFERENTIAL DIAGNOSIS OF SPLENIC AND RENAL TUMORS.

BY

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THE ever-advancing progress of abdominal surgery has made it incumbent upon those practising this art to become very conversant with things medical, and one of the most difficult problems to solve is a differential diagnosis of large tumors arising in the left hypochondrium. Of recent years much has been published relative to the surgical affections of the spleen, and the results have been so gratifying in most instances, that the diagnosis of maladies of this organ have become quite as important to the surgeon as to the physician.

Let us take, for example, a patient presenting a large abdominal tumor which has developed silently. The patient has probably complained of pain and a feeling of weight in the left side of the abdomen; he has lost flesh and strength. Other than this there is no precise symptom which can direct our search; there is no history of hematuria, no nephritic colic and no malaria. In examining the patient the first thing which will probably strike the clinician's attention is a bulging of the left hypochondrium and in some cases the ribs may be pushed outward, thus enlarging the diameter of the lower part of the thorax, while the left flank is also prominent. Now, if we look for any indications to be derived from the morphology of the growth, we should remember in the first place that when the spleen becomes hypertrophied it usually retains its shape. If one is dealing with a splenomegalia the tumor will be found flattened and elongated, having the consistency of the spleen and presenting a projecting border in which several indentations may be detected. This anterior border is sharp and distinctly felt, because it is in direct contact with the anterior abdominal wall and in some instances the fingers of the examining hand may be pushed under this sharp border with considerable ease and a sudden ending of the tumor will be perceived, the hand dipping down into the

abdominal cavity. Such are the principal characteristics which most authorities have described in splenomegalia. We have also been taught that large spleens are quite regularly oval in shape, occasionally offering a characteristic crenulated border, and can be moved downward and inward in the direction of the umbilicus, but not vertically. Certainly in many cases by abdominal palpation one will find a large tumor appearing to emerge from below the left costal border, descending downward and inwardly toward the umbilicus. It can be easily circumscribed by the examining hand, its borders will be found rounded and hard, showing that the growth is oval in contour. By percussion dulness will be found over the tumor, which will extend up under the ribs even as high as the fifth. However, things are not always as thus described, because the spleen may be misshapen to such an extent that it may even take on the shape of the kidney.

Neoplasms of this organ are movable until they have reached a considerable size, but one can never elicit true ballottement, because these growths have never any contact with the lumbar region. By palpation friction may frequently be detected, indicating the existence of a perisplenitis. Renal tumors, on the contrary, are more apt to be round, their long axis being generally vertical, while in neoplasms of the spleen the long axis is oblique from above downward to the right toward the umbilicus. A very important diagnostic element is furnished by ballottement. The study of the development of renal tumors shows that, if their development forces them to extend toward the abdomen, they never lose their lumbar position; they become lumbo-abdominal and only become purely abdominal in those instances where renal ectopia has preceded the development of the tumor. These growths, which have retained their relationship with the lumbar region, or which can be made to reoccupy it, are more apt to be of renal origin, and, for this reason, it is not sufficient, for the simple reason that an abdominal tumor which can be mobilized by pressure over the posterior abdominal wall should be considered as giving rise to renal ballottement It can be thus termed only in those instances where the pressure which gives rise to it has been made exactly in the costo-vertebral angle as near the apex as possible, which is the absolute and only condition. But in those conditions which we have supposed present, that is to say a large tumor in the left flank, a renal neoplasm can come in contact with the ab-

dominal wall and thus lose its distinctive characters of a renal growth. While still preserving its relationship with the lumbar region the tumor pushes the intestine aside and comes in immediate contact with the anterior abdominal wall. Ballottement, admitted as pathognomonic of renal tumors, may in the first place be difficult to elicit on account of the enormous size of the growth; or, on the other hand, it may be obtained in those cases where the neoplasm has not developed from the kidney. In point of fact any growth developing in the omentum, large intestine or spleen, if the tumor has a tendency to come in contact with the posterior abdominal wall at the same time that it develops toward the anterior abdominal wall, may give rise to ballottement. There is perhaps another necessary condition, namely, that, if the kidney is somewhat displaced downward, this displacement will then play a certain part in the production of ballottement, because the displaced organ acts as an intermediary between the hand which produces the shock behind and the extrarenal tumor which transmits it forward, but I cannot be affirmative in this respect. This sign is consequently not pathognomonic and it must be corroborated by other evidences of renal tumor, and all contradiction between the symptoms presented in a given case should render it at least suspicious. In one instance ballottement was distinctly found, likewise a tympanic area over the tumor, and a diagnosis of renal growth was unhesitatingly made, but at the autopsy both kidneys were found atrophied, while the gall-bladder was enormously developed. The presence of the intestine in front of the growth, which has been considered as an important distinctive symptom between renal growths and tumors of the gall-bladder, spleen and so forth, should consequently be looked upon with some little suspicion.

Palpation of such large growths can never lead to any definite conclusion and must be completed by other methods. If we consider for a minute the anatomy of the parts it will be at once recalled that the spleen is an intraperitoneal organ, while on the contrary the kidney is retroperitoneal. In the normal condition the spleen is in contact with the abdominal wall, and when it is enlarged from any pathologic cause this contact only becomes more intimate; consequently no intestinal coils are interposed between the abdominal wall and the growth, and dulness is obtained on percussion. A renal growth bounded behind by the ribs, muscles and aponeuroses of the

lumbar wall cannot develop in this direction and consequently projects forward, at the same time pushing aside the intestinal mass. However, on the left-hand side, the growth may take on a thoracic development, pushing back the diaphragm and the spleen, and one instance has been related where a left-sided renal neoplasm reached as high as the seventh rib in the axillary line. By developing forward the kidney not only pushes the peritoneal layer covering it, but also the intestine forward. On account of its extreme mobility the small intestine may be pushed aside, but the same thing cannot be said of the descending colon, which is in immediate contact with the kidney and, to a certain extent, fixed to the anterior aspect of the latter. Consequently, in cases of left-sided renal tumor, a band of intestine will be found over it, which is nothing else than the descending colon. We consequently will get tympanism on percussion, if the gut contains air, but, if it is collapsed and flattened, dullness may be elicited, but palpation will reveal the presence of a body which rolls under the fingers. If sonority cannot be detected it may be made to appear by filling the gut with air by way of the rectum. This sign, however, is far less constant than has generally been supposed, because the colon may have been pushed outward on the side of the tumor, and this is what generally happens when the growth reaches any very considerable size. In one case of sarcoma of the kidney the colon was pushed outward and the growth became in direct contact with the abdominal wall. However, when the sonority is present it is very important, because in principle it indicates that the tumor is retroperitoneal.

But splenic tumors, ordinarily in direct relation with the anterior abdominal wall, may, on account of adhesions, or an abnormal development, be separated from the latter by the intestine, and in one case, where the presence of a left-sided abdominal tumor was evident and by palpation the anterior border could be distinctly made out, the condition was diagnosed as a splenic tumor and nevertheless there was marked sonority in front of the tumor. This sonority may be present if the growth starts from that part of the internal aspect of the spleen which is situated behind the hilum, and it will then consequently push the greater cul-de-sac of the stomach forward and likewise the angle of the colon which is attached to the spleen, and an extensive sonority will be present. However, this does not present the same characters as in the case of

a renal tumor, because it is diffuse and does not resemble an intestinal coil, which is often appreciable to sight and to touch, and which obliquely crosses the anterior aspect of a renal tumor.

In cases of splenic growths the tumefaction has a greater tendency to project toward the anterior abdominal wall than into the lumbar region, and percussion may elicit dulness extending up the lateral aspect of the thorax, leaving sonority in the lumbar region, while the essential character of renal dulness is to continue with that of the vertebral column without any interruption. Certain English authorities have been supposed to have found a distinctive symptom for splenic tumor, and according to their way of thinking the presence of a sonorous band seated between the lumbar part of the vertebral column and the tumor would be in favor of a neoplasm of the spleen. However, the results obtained by lumbar percussion are not precise, and when this region is percussed in a patient where the kidney has been removed no difference can be found between the two sides. Nevertheless, this sign should be looked for and when it is distinctly in evidence a certain importance may be given to it. In one case where sonority was found separating the dulness obtained by percussion of the tumor and that of the vertebral column little importance was attributed to this fact, because the diagnosis of a renal tumor had been made, but in reality when the patient was operated upon a hydatic cyst of the spleen was found.

From the results of percussion we may, however, conclude that if a sonorous band is found in front of a large abdominal growth our presumptions should be in favor of a renal neoplasm, but if dulness of the tumor continues directly backward with that of the vertebral column we also have here a sign which is distinctly in favor of the growth being of renal origin. If we auscult the growth we may obtain a sign that palpation has already given—namely, one will hear friction sounds which indicate perisplenitis. It has also been said that in cases of splenic tumor auscultation may give rise to a souffle, but in those cases that I am familiar with this sign was absent. If we resort to the phonendoscope, we can combine auscultation and percussion. The percussion is realized by a series of superficial frictions and not by a series of shocks. This friction gives rise in the organs subjacent to the cutaneous zone which is the seat of them, to vibrations which vary according to the consistency of the viscus considered, and consequently one may outline an

organ by ascertaining the limit of the propagation of the vibrations which are communicated to it. This method has been applied with excellent results and by its use it is occasionally easy to exactly map out the contours and the size of the various abdominal viscera and to very exactly localize the seat and connections of a given neoplasm. Although there is considerable difficulty this method has certainly given very excellent results, and in one case reported by Albarran a diagnosis was made in a child whose large spleen had led one to believe that the case was a malignant renal growth, but by this process he was able to map out the contours of the kidney which were found normal. I have, however, resorted to this method on several occasions in cases of left-sided abdominal tumors, and I must confess that the result has been disappointing.

Puncture of the growth does not always enable us to come to any exact conclusion and, although it may indicate whether the tumor is solid or liquid, it will rarely allow one to diagnosticate the seat of the growth. However, if fluid is withdrawn, the renal nature of the liquid can be ascertained by analysis, but it is well-known that the fluid contained in cases of long standing hydronephrosis usually no longer contains urea, while uric acid and the extractive materials of the urine have likewise disappeared. Exploratory puncture will, however, allow one to make the diagnosis of hydatid cyst, while the color of the liquid removed, the presence or absence of urea, uric acid and the microscopical examination for hooks of the echinococcus will allow one to make a differential diagnosis between the former and an old hydronephrosis. If, on the other hand, exploratory puncture only results in the withdrawal of blood it is probable that one is dealing with a solid tumor, but nothing more than this can be affirmed. Consequently, to sum up, it may be said that exploratory puncture will rarely allow one to establish or confirm a diagnosis, and since it is far from being free from danger, it should rarely be resorted to.

We now come to a group of signs of great value and, although they are not always of the greatest, they are at least frequently quite equal to those which have already been studied and it is to these that recourse should be had in difficult cases; I refer to the study of functional disturbances of the spleen and kidney in order to localize the seat of the growth. It should, however, not be assumed that a diagnosis of the case can always be made by this means, but what can be done is to localize the seat of

the growth, either in the kidney or the spleen, after which the nature of the disease remains to be discovered. Of pain and various symptoms of compression I have little to say, because they present nothing that is pathognomonic, but I am desirous of especially insisting on a very important symptom of compression—namely, varicocele, and then upon the condition of the blood and the urinary function.

Pain is a frequent symptom and all subjects the possessors of large abdominal tumors will of themselves call the physicians' attention to this symptom, which is often the first one noted. In renal neoplasms it is produced by dragging of the tumor, adhesions and compression of the nerves of the region. The pain is more or less sharp and may be either continual or paroxysmal and is seated in the lumbar region and the hypochondrium. From here it may radiate toward the testicles, the thigh and intercostal spaces, so that it may simulate the lightning pain of tabes. Such pain is easily explained, being produced by compression of the lumbar and sacral nerves, thus giving rise to extension to the lower limbs. Pain is met with in splenomegalia, but more frequently the patient complains of a sensation of dragging or of weight, while paroxysms occur resulting with the intercurrent attacks of perisplenitis. The seat of this pain varies; it may simulate intercostal neuralgia, or it may be localized in the abdomen or in the left shoulder or scapular region, this being the case when the tumor is in close contact with the diaphragm or bound to it by adhesions. Splenomegalia generally has a more marked thoracic development than a renal neoplasm; it pushes up the diaphragm and the lung, and oppression or dyspnea is the natural consequence; the left lung may be even pushed so far up and the heart deviated to the right of the sternum so that dyspnea becomes very violent and interspersed with attacks of oppression.

When developing into the abdomen the growth gives rise to digestive disturbances, such as dyspepsia, nausea, vomiting gastric pains and constipation; the patient complains of intra-abdominal weight and dragging. Palpation will sometimes awaken the pain, but in some instances other than when the patient is examined there is little suffering.

The development of these large tumors does not undergo its evolution without giving rise to other symptoms of compression, but the larger number of these have nothing which is characteristic, and although splenomegalia is more apt to give rise to

dyspnea, oppression and digestive disturbances, renal tumors perhaps more frequently produce compression of the vena cava resulting in edema of the lower limbs. But among these symptoms of compression there is certainly one possessed of great value, and whose presence, although not being pathognomonic of a renal neoplasm, will certainly be a very strong presumption in favor of this diagnosis; I refer to varicocele. A number of authorities have mentioned this symptom and the majority think that it is a symptom greatly in favor of a renal growth, especially when this varicocele is of recent date and at the same time of its appearance the patient has complained of pain on the left side of his abdomen. Consequently when dealing with a recently developed varicocele one should always examine the renal region on the corresponding side, even when it is seated on the left, because it is well known that varicocele is very frequent on the left for several reasons. The left spermatic vein is somewhat longer than the right; it is compressed during its passage through the pelvis by the iliac portion of the colon, it also encounters the renal vein at a right angle—all of which cause a certain hindrance to the passage of blood through it. Generally speaking, the varicocele only arises when the tumor has become very large, but Legueu, who, by the way, attributes this symptom to the involvement of the lymphatics with their resulting compression of the spermatic veins, mentions the following case where autopsy only showed a small neoplasm the size of a walnut.

The patient presented three symptoms—namely, hematuria, varicocele and a left-sided lumbar growth. A diagnosis of carcinoma of the left kidney was made and an exploratory laparotomy done in order to ascertain the size and connections of the tumor. During the operation it was discovered that the spleen alone was increased in size, while the kidney appeared intact. The patient died two days later, and at the autopsy a focus of cancer was found in the left kidney with enormous masses of lymphatic glands along the vertebral column, which compressed the spermatic vein. This case consequently shows that there is no relation between the size of the tumor and the production of the varicocele, the latter being merely an external manifestation of secondary lymphatic involvement.

Such, however, is not the unanimous opinion, and Heresco found that varicocele was absent, although the hilum had been invaded by the large glands, while, on the other hand, he has met

with cases of varicocele where the lymphatics were not enlarged. In a case related by Morrestin varicocele was present and, although a transperitoneal nephrectomy was done, it was impossible to discover any large glands, the patient recovered and the varicocele disappeared. In a case reported by Albarran of a large left renal tumor having given rise to a very large varicocele on the same side, lumbar nephrectomy was done, and during the operation no enlarged glands could be discovered in the region of the hilum. The day following the operation the varicocele had disappeared. The patient died and autopsy failed to reveal the presence of any lymphatic enlargement. In a case reported by Giauffer the patient lived nineteen months after his operation, during which time the varicocele did not reappear. It matters little about these various findings, whether the varicocele was produced by compression resulting from enlarged glands at the point of entrance of the spermatic vein in the renal, or whether the tumor itself was the cause of this compression, because, as far as we are concerned, it is merely a question as to whether or not much importance should be given to this symptom. Now, I believe that it is important if the varicocele is of recent date, but I do not believe that it is a pathognomonic sign of renal growth, still if it becomes added to other symptoms it will make the balance weigh in favor of this diagnosis. Varicocele has been found in cases of splenic neoplasm, such as primary tuberculosis of the spleen and so forth, and Chauffard points out that a splenomegalia of any nature will not in itself compress the renal and spermatic veins, or the pampiniform plexus, but when the nature of the lesion is either cancerous or tuberculous the lymphatics become involved and by their enlargement produce the pressure. In cases of renal neoplasm the presence of enlarged glands is not necessary for the production of varicocele, the tumor alone being sufficient. If the occurrence of varicocele in itself cannot affirm the presence of a renal tumor unless an abdominal tumor is found which corresponds to the kidney, it at least indicates that one should, in the first place, explore the corresponding kidney and will thus put one on the track of establishing a correct diagnosis. Although one should not forget that other growths may give rise to this symptom, it nevertheless is a sign of very great value in favor of a renal localization of the growth.

Let us now continue other points in the diagnosis, because as yet we have not been able to establish an absolutely certain

diagnosis by the methods so far considered. Knowing the normal functions of the kidney and the spleen, one should ascertain if, when these organs are the seat of a lesion, their functions are disturbed, and it is probable that these rather delicate investigations will allow us to come to a conclusion whether the kidney or the spleen is the seat of the affection. In the first place, let us consider the urinary function. The twenty-four hour urine has been collected in order to ascertain the total amount, while the presence or absence of albumin or pus is noted. After having centrifuged the urine red blood cells should be looked for, likewise Koch's bacillus, recalling to mind that this bacillus is usually present in very small numbers in cases of renal tuberculosis.

It is very evident that if the urine is purulent and contains either the bacillus of tuberculosis or red blood cells further research is unnecessary, because all this signifies that the kidney is the seat of the trouble. But if these clinical signs are wanting and the twenty-four-hour amount of urine is normal, we should continue the examination. The examination of the urine secreted by both kidneys is necessary, but can give no indication as to the lesions that one of the two urinary glands may be the seat of. A patient may void a normal quantity of urine and a total amount of extractive matters may be increased so that nothing in the examination of the total quantity of urine can lead one to suppose that one of the kidneys is functionally destroyed. This examination is only of use when the diagnosis of a renal neoplasm is evident and it then allows one to conclude whether or not the other kidney has retained its normal function. It is only by a separate analysis of the urine coming from each kidney that the seat of the tumor may be known to be in the kidney by noting the diminution or absolute cessation of the secretion on the diseased side, or else some change in this secretion. In a general way it may be admitted (1) that in a given time both kidneys secrete different quantities of urine, whose composition is also different; (2) the difference between the quantity of urine secreted by each kidney during half an hour may vary between 10 and 40 per cent.; (3) this difference becomes attenuated in direct proportion to the length of time; (4) there is a law of compensation according to which the kidney furnishing the largest amount of urine secretes a liquid of lower specific gravity. In order to deal with this condition of affairs the examination

should be prolonged and we have numerous means at our disposal for ascertaining whether or not both kidneys are functionating, and these means will allow us to make a precise and sure diagnosis. I refer to cystoscopy, ureteral catheterization and intravesical separation of the urine.

Cystoscopy shows the condition of the bladder and the aspect of the ureteral orifices and the way in which the urine is ejaculated from the ureters into the bladder. However, catheterization of the ureters may be done, but a more simple way which may be resorted to by everybody is intravesical separation of the urine. Certain bladders may be pathologically changed so that separation is impracticable, or the presence of a stricture may prevent the introduction of the instrument, but in this case there is no reason why the lesion should not be dilated so that the impossibility will be done away with. Of course, this method cannot be used in children on account of the small caliber of the urethra. This method is of considerable importance, and in the cases which we are now considering there will usually be extensive anatomic changes throughout the entire renal parenchyma, so that the functions of the diseased organ will be considerably interfered with. For example, the diseased kidney will secrete less urine and the quantity of urea contained therein becomes diminished.

Albarran has studied the elimination of methylene blue in cases of renal neoplasm, and in one case the elimination by the diseased kidney occurred under the form of chromogen during the first twenty-one hours and after this up to the fifty-second hour the urine contained both methylene blue and chromogen. Cryoscopy of the urine secreted by the diseased kidney has also given rise to much experimental work, and in one case reported by Albarran the point of freezing between the two specimens showed that in the diseased kidney it was 0.70 and in the healthy kidney it was 1.48. Here then the lowering of the freezing point of the urine shows the marked functional changes of the diseased kidney, which is shown by the lesser molecular concentration of the urine. Consequently, in kidneys the seat of malignant change the parts of the organism which are free from the neoplastic invasion are nevertheless decidedly diseased and functionally weak.

In cases of renal tuberculosis with obstruction, separation of the urine shows absolute absence of urinary secretion on one side and the same may be said with closed pyonephrosis, but

in this case the patient will give a history of urinary symptoms, a rise in temperature, gastrointestinal disturbances, which will leave no doubt as to the character of the lesion.

The examination of the functions of the spleen are quite as important, and if the neoplasm has developed in this organ, it is more than probable that its functions will be disturbed. Consequently, in order to ascertain this point, it is to blood examination that one should resort to in every case of splenomegalia.

Carcinomatous leukocytosis has been the object of study and has been especially met with in generalized sarcomatosis. In one case of sarcoma of the bone the blood count showed 50,000 leukocytes, while in a case of carcinoma of the thyroid the count showed 70,000. In one case of sarcoma of the kidney with metastasis in the lungs and liver, blood counts showed 25,000 white cells, while the red cells were considerably reduced in number. This anemia with leukocytosis in cases of malignant growth is common and is more or less marked, and when it reaches a high degree it is the most prominent symptom presented by the patient. The formulæ of the blood counts are as yet not definitely settled, and, although the polynuclears are far more frequently met with, still mononuclears may occasionally be encountered. In tuberculosis the presence of a leukocytosis can no longer be discussed, at least in certain forms and at certain periods in the evolution of this disease. It has also been shown recently that the number of leukocytes varies very considerably from day to day or even during the day itself, a fact which explains the discord of authorities on the existence or absence of leukocytosis in these cases.

A considerable increase in the leukocytes belongs especially to leukemia and when their numbers reach beyond 70,000, it is practically pathognomonic of this pathologic process. Some instances of this affection have been recorded where the number of white cells was lower and in reality the diagnosis of leukemia cannot be made affirmative until the abnormal types of cell, described by Ehrlich, have been shown to exist in the specimen. There is another form of splenomegalia which should be considered; I refer to primary tuberculous splenomegalia, and it may be said that of all the abdominal organs, the lymphatic glands being excepted, the spleen is the most frequently affected by tuberculosis. Blood examination in these cases is of great diagnostic value, but instead of anemia there is a great

increase in the red cells to such an extent that in one instance there were 6,200,000 red cells for 6,000 white and in another case the count showed 8,200,000 reds and 31,425 whites. This condition of the blood may, however, not always exist and in several reported cases a slight anemia has been found. However, when in presence of a large tumor occupying the left hypochondriac region, if the red cells are greatly increased, one should immediately think of tuberculosis of the spleen, but it must also be remembered that this pathologic process does not always give rise to an increase in the red cells.

Since this is the case the question arises as to how one should make a diagnosis of tuberculosis of the spleen. The use of tuberculin is generally admitted, I believe, to be dangerous, and perhaps a latent tuberculous process is better detected by serodiagnosis, although this procedure is certainly open to many errors. The specific bacillus of tuberculosis may be searched for in the blood, although not much hope can be placed in this, and even should the organism be found it would only show that a tuberculous process existed, but it would not tell us whether it was in the kidney or the spleen when the tumor is situated on the left-hand side, and it would be only in favor of a localization in the spleen rather than in the kidney in those cases where a urinalysis remains negative.

In order to complete the diagnosis one should take into consideration the examination of the other viscera, the patient's general condition and his antecedents. Now, it is well known that lesions of the spleen generally react upon the liver, so that this organ should be carefully examined, and, if it should be found increased in size, which is generally the case, our presumptions may be in the first place in favor of a splenomegalia but it should not be forgotten that in some cases the liver is normal, it does not reach below the costal border, while blood examination may prove beyond a doubt that the case is one of myelogenous leukemia. An increase in size of the liver may lead one to an erroneous conclusion by corroborating other symptoms pointing to splenomegalia. Thus, for example, in one case, there was a considerable increase in size of the liver, the organ measuring 14 centimeters in the mammary line and this sign was in itself enough to almost show that the diagnosis of tuberculous splenomegalia was correct, when in reality the autopsy showed that the increase in size of the organ was due to a neoplasm.

In the primary splenomegalia of Debove and Bruhl in Gaucher's disease and in primary tuberculosis of the spleen this same increase in size of the liver is met with, and in these cases one should look for other signs which belong to these various affections, although it must be admitted that the difficulty with a differential diagnosis is very great. In some instances, which are most infrequent, however, the liver will be found reduced in size—in other words, atrophied. In this case examination of the liver will show anemia without leukocytosis, and in spite of the hepatic atrophy the patient will not present any symptoms of cirrhosis, but it is only at the very last period of the disease that symptoms of atrophic cirrhosis will show themselves, and under these conditions the diagnosis of Banti's disease can be made. This diagnosis is most important to make, because upon it will depend the life of the patient and the treatment, because splenectomy performed in time will rescue the patient from death. Extirpation of the spleen results in a radical cure, and if there is a commencing hepatic cirrhosis, splenectomy may prevent its development and bring about a complete cure. Banti's disease, when left to itself, or to the resources of medical treatment, is fatefully mortal.

For this reason any secondary involvement of the liver should cause one to direct his researches to the spleen and cause the diagnosis to be in favor of a lesion of this organ, just as in the case of a rapidly developing varicocele one should at once think of a renal lesion and examine the kidney on the side upon which the varicocele is seated. Be it understood that I am not considering the numerous cases where a hepatic affection has distinctly anteceded the other symptoms and has given rise to splenomegalia.

After having gone so far the condition of the peripheral lymphatics should be ascertained and when large masses of glands are found in the neck, axilla or groin a large spleen may also be made out with or without leukemia. These lymphatic hypertrophies produce very marked functional disturbances, while hypertrophy of the deeply seated glands produces functional disturbances still more marked, such as icterus, ascites, edema of the lower limbs; the disturbances produced by enlarged mediastinal glands consist of dyspnea, cough, changes in the voice, disturbances of the pupils, and the like.

If one is dealing with a renal tumor of sufficient size to simulate a splenomegalia, he should recall to mind that in order to

reach such a size the tumor is very probably a sarcoma and it is known that under these circumstances generalization of the process takes place by the way of the blood, very rarely by the lymphatics, and that consequently the lymphatic system will be found intact.

Examination of the lung by giving evidences of a tuberculosis undergoing its evolution and confirmed by the presence of the specific bacillus in the sputum and inoculation in guinea pigs, is certainly in favor of a tuberculous splenomegalia, but it should not be forgotten that in this disease the bacilli will remain inclosed within the spleen for a long time, and that the most attentive examination will fail to reveal the presence of Koch's organism anywhere. In one case a pulmonary tuberculosis was supposed to exist when in reality the symptoms presented were due to a generalization of a renal sarcoma.

Examination of the heart in anemic subjects, may show the presence of a murmur, especially at the apex, and this will also be encountered in the vessels of the neck, preferably in cases of leukemia.

Speaking of the functional signs I spoke of intravesical separation of the urine and the examination of the urine secreted by each kidney, and I will now consider whether or not in the total amount of urine excreted some change may exist which will cause one to diagnose one disease more than another. It has been shown by Rommelaere that in malignant disease the amount of urea becomes diminished, but then again this decrease is met with in many diseases. On the other hand these patients are confined to bed, their appetite is poor and their digestive tract in bad condition, so that the decrease in the total amount of urea can be readily attributed to these defective conditions. In the case of leukemia the urine is voided in small amounts; it is very acid and occasionally contains very large quantities of uric acid, while the urea is diminished. In the physiological condition the twenty-four-hour amount of urine should contain 50 centigrams of uric acid, while in leukemia the total amount may reach 3 grams or even more. In one case of sarcoma of the kidney the amount of uric acid eliminated in twenty-four hours amounted to 2 grams and 53 centigrams. In all these cases the antecedents of the patient should be carefully gone into, never forgetting the possibility of malaria, and one should also ascertain the record of tuberculosis in the family of the patient and whether or not at any time he has presented evidence of tuberculous infection.

In leukemia the patient is extremely pale, the mucous membranes are without color, while the skin is dirty white. Strength is rapidly lost and the patient should become incapable of making any effort, and at the same time he is subject to vertigo and buzzing in the ears. Auscultation of the vessels of the neck reveals a murmur, while the pulse is rapid and soft. The lower limbs are the seat of slight edema, temporary in the first place, but which later on becomes more marked and permanent. Hemorrhages are common and frequently severe, often resulting fatally. The slightest prick is followed by a considerable loss of blood. Temperature is raised at night. It has been pointed out that generally speaking tuberculous splenomegalia gives an entirely different look to the patient, whose color is bright red, or even blue. In Gaucher's disease, the general health is rapidly compromised, the patients becoming rapidly anemic and thin. In cases of renal tumor the subject also becomes cachectic, but the progress is slower and he does not offer this pale white tint, but rather a straw color hue of the integuments, while loss of flesh is extreme. These patients die of cancerous cachexia, or from generalization of the process, while renal insufficiency is exceptional. If the tumor is a hydronephrosis or a hydatid cyst the general condition of the patient remains intact for a considerable length of time and it is only at a later date that certain complications will begin to show their effects. Pyonephrosis and tuberculosis give rise to elevation of temperature and leave no doubt as to the suppurating character of the lesson and which the etiology in itself will allow one to suspect.

SOME OBSERVATIONS AND EXPERIENCES RESPECTING THE SYMPTOMS AND TREATMENT OF ATRESIA VAGINÆ.

BY

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AMONG the abnormal conditions occasionally met with in gynecic practice is that peculiar, adventitious formation known as atresia vaginæ. The abnormality in this class of cases may present itself as complete or incomplete, and as congenital or accidental in its manifestation. Inflammation occurring in the vaginal tract may become the exciting cause. Adhesions of the labia may seriously interfere with normal parturition, or the existence of abnormal union of parts is liable to retard, if not prevent altogether, the menstrual flow. In atresia hymenalis the obstruction will not unfrequently be found to be complete, and thus to give rise to collections of blood or mucus that may be high up in the vaginal introitus, a condition that can, for the most part, be relieved by resort to surgical measures only.

Reference to the formation of the normal vagina will show that its length on the anterior wall is nearly three inches, and that its extent on the posterior aspect exceeds that amount by at least one inch. The vagina is lined internally with a mucous tissue, and its outlet is found more or less closed by the hymen and the carunculæ myrtiformes.

The vagina is developed, as is the uterus and as are also the oviducts, from the two ducts of Müller. Repeated observation shows that the ovaries develop from the upper part of the Müllerian ducts, and that a lower portion of these ducts widens out and forms the uterus. Out of a still lower part of these ducts is formed the vagina. The manner of the actual origin of the ducts of Müller has never, I believe, been fully explained. Comparative anatomy and ontogeny seem, says Haeckel, to indicate that these ducts proceed by differentiation from the Wolffian ducts. It is probably more correct to say that the original primitive kidney duct breaks up by differentiation into two secondary

similar ducts. These are the Wolffian and Müller ducts. The latter lies immediately inside the former. Without discussing the matter in this respect further, it may be confidently affirmed that all tissue elements, which are primarily subject to fission or segmentation, are liable at times to remain in a state of nondifferentiation.

Some few years since I was called in consultation in the case of a woman who had, four years before, been delivered of a child by forceps. There had been from the history of the case considerable traumatism as a result of that last labor. The woman, when I was called, complained of a tumor, as she believed, or an obstruction that interfered with her marital relations. The condition proved to be the result of adhesions which took place, undoubtedly, from the solution of continuity caused by pressure of the fetal head, or by the forceps that had been employed. Several firm bands of cicatricial tissue were found to have been formed laterally between the middle and upper segments of the vaginal walls. These I freely incised under proper antiseptic precautions. Hard dilators of appropriate size were afterward used to prevent subsequent union of the divided parts from taking place. The patient since then has given birth to another child without having the need of resort to artificial measures. Traumatic cases of atresia vaginæ can not unfrequently be practically cured by surgical interference. Congenital cases, however, cannot be so satisfactorily relieved. In those cases of atresia vaginæ in which the uterus and oviducts are merely rudimentary or are only partially developed, operative treatment will prove useless, or not be attended by any material advantage.

Six other cases of acquired atresia of a most marked type have come to my care. One case was due to extensive laceration involving the middle portion of the vagina; two cases were due to deep lacerations and sloughing of the left lateral segment of the vagina; one case occurred from an injury caused by a railway accident; one case from laceration of the posterior vaginal wall, resulting through instrumental delivery and subsequent gonorrheal invasion, and one case in which the use of a hard pessary had been unduly prolonged. Surgical measures for overcoming the adhesions, supplemented by the use of hard dilators of various sizes and by subsequent tamponading of the vaginal introitus, proved a quite satisfactory method of treatment. In all these cases the occurrence took place in patients who were married at the time and who had not reached the menopause. In the two

cases in which the cause was due to the extensive laceration and sloughing of parts, pregnancy afterward failed to take place. Subsequent pregnancy also failed in the case in which the gonorrheal attack afterward took place.

Cases of more or less firm uniting of the vaginal walls from the excessive use of acids, or other caustic agents, in the treatment of morbid conditions of the genitalia, I have had chance to meet. In my early practice I noticed quite a number of cases in which caustic agents had been employed, and in which the cervix uteri and upper segment of the vagina had undergone irremediable damage by such use of escharotic substances. In one such case nitrate of silver had been so freely used in an attempt to heal an old ectropion of the os uteri that serious adhesive inflammation of the vaginal walls took place. During the treatment it seems that the patient had been kept in bed after the uterus had been put into a state of anteversion; the accidental adhesion between the lower segment of the uterus and the posterior vaginal wall afterward became so firm that subsequent descent of the uterus did not take place. The patient had fortunately so nearly reached the menopause that surgical measures for relief were deemed unnecessary.

In those cases of preternatural closure of the hymen (atresia hymenalis), incision of the membranous fold, which may have become very thick and rigid, will of course be demanded. In two cases I found it necessary to employ for considerable time vaginal dilators, and iodoform gauze as tampons.

Cases now and then occur in which the vaginal opening in its entire extent will be found extremely small. In such cases the uterus and its appendages were most always found also unduly deficient, or not developed to any considerable extent. If the patient be married, and not approaching the period of the menopause, resort to gradual dilatation will be sometimes helpful, as was the favorable result in two of my cases. Vaginitis from gonorrheal or even from catarrhal inflammation and from irritating discharge may lead, after the occurrence of the menopause, to firm closure of the vaginal introitus. I have seen quite a number of such cases.

One case, in particular, I might mention, in which the patient had had ten children, all born by natural processes. Three years after the occurrence of the menopause, the vagina had become so contracted and rigid that it was with much difficulty that a number twenty-four French scale dilator could be made to enter.

I have had in my practice a case in which the vagina, at the

time the first labor began, was so preternaturally contracted that an artificial opening, by an extended incision, was necessitated before the patient could be delivered. The incision was made transversely midway between the meatus urinarius and the anus and the lower section of the rectum. Considerable thickness of areolar tissue had to be overcome before the cervix uteri could be reached. The os uteri was found to have become fairly well dilated. Delivery by the feet was then quite easily accomplished. Ten weeks later the cervix could be very satisfactorily seen by the aid of a small vaginal speculum. The age of the patient was twenty-seven years.

In this connection, it might be again said that in those cases of congenital atresia vaginæ in which the uterus and the oviducts are merely rudimentary, or are absent, resort to surgical measures will, for the most part, be not only a useless undertaking, but will prove to be a measure of unjustifiable interference. To make a correct diagnosis of such a condition before proceeding to the recourse of surgical measures, will not often be found difficult, provided careful attention be paid to the various symptoms and appearances in more or less detail. Bimanual examination, so far as it can be fully carried out, assisted by rectal irrigation, will be most material in helping to decide whether or not the uterus and its adnexa are absent. The conclusion of their nonexistence may be strengthened by the absence of the vagina and the clitoris, or by the presence of a preternaturally small clitoris. On the other hand, recurrent menstrual pains, and more or less accumulation of blood that has taken place high up, and the discovery of the existence of pressure upon or over the bladder, or against the rectum, may, without doubt, be regarded as a strong indication that surgical interference may be absolutely demanded. Otherwise, overdistention of the uterus and the Fallopian tubes would be likely to take place, and to be productive of rupture and shock, and later of inflammation, or other untoward symptoms. Two such cases I have known to have occurred before I was called to the treatment. The fetal vagina may become closed permanently before the birth takes place. This condition may result from inflammation occurring in the vaginal fetal tissue. In such cases the uterus and the appendages may be found duly developed. The treatment of this condition without timely, careful examination may lead to a dangerous complication of matters.

There can scarcely be any doubt that, in those cases in which atresia vaginæ supervenes after parturient processes which have

been productive of traumatism or inflammatory changes, the closure which follows is often mainly due to more or less sloughing, as a result of the injury. In such cases the mucous tissue of the vagina had undergone destructive changes at a number of different points along the vaginal introitus. The history of two such cases which I have had in my practice has afforded me occasion to make a careful record of the appearances of such a condition. Speaking incidentally of some of the results of atresia vaginæ occurring through inflammatory processes and traumatism, I might here remark that I had opportunity to learn, some few years since while in Mexico, that lacerations of the perineal and other structures incident to parturition among the Toltecs and the Aztecs may heal quite often without the intervention of surgical measures. The occurrence of such cases in the women of those tribes is often not followed by the same inconvenient results as may take place in the women of the Spanish and other European races. Such exemption from prolapse, and other attendant symptoms, have been found to be due undoubtedly to the squatting position so continuously assumed by those primitive, native women, who grind by hand on the *metate* their maize for *tortillas* and their cocoa for chocolate.

DIFFICULTY ENCOUNTERED WITH FETAL ARMS IN A BREECH LABOR.

BY

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A LABOR in which the breech constitutes the presenting part may, with propriety, be considered as a variety of manual labor, although such labors are uniformly placed in the preternatural class. In most instances the woman is able to relieve herself, the exception perhaps being a first child. The risk to the child in all the labors whether natural or artificial, in which the child's body is first delivered, arises from the delay in the delivery of the head and the compression of the umbilical cord. For this reason, such labors are looked upon as hazardous. The number of still-born children from breech-labors is large (30 per cent.). This can, to some extent, be accounted for on the ground that breech presentations, being generally classed and looked upon by many as preternatural, impress the less experienced practitioner with the idea that such cases always require extrinsic aid. It is thus by ill-timed officiousness, or an entire ignorance of the correct rationale of such cases, that the earlier stages of labor have been disturbed. There is no one factor that so largely and certainly contributes to divert nature from her proper course as the belief that art can always benefit her. It seems that breech-labors are particularly prone to invite the constant employment of ill-directed maneuvers by ignorant accoucheurs and midwives, thereby often converting a simple and natural case into a laborious and dangerous one.

I may be permitted to relate a case of breech-labor, where every indication gave the assurance of a speedy and happy termination.

Mrs. L., aged 28; well developed and in excellent health; married two years; was in labor with her first child. I had examined the patient in the seventh month of her pregnancy, but was not then able to positively determine the character

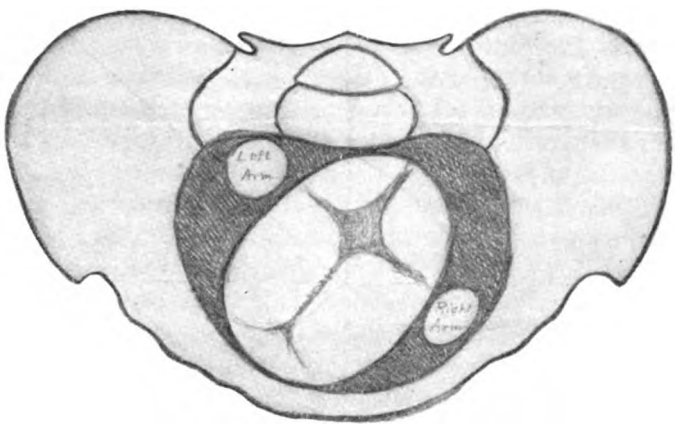
of the presentation. Subsequent examinations, however, gave me a reasonable assurance that the breech was the presenting part. The correctness of this presentation was verified when the membranes ruptured during labor. The position of the child was right-sacro-posterior, the right ischium corresponding to the right acetabulum.

The nature of the labor was normal, and had my attention not been called to the severe uterine activity, I would have felt at ease with its progress. As it was, this tempestuous state kept me busy in my efforts to retard birth by holding back the body, that no undue delay might happen with the head at the brim. It was my aim to maintain as good a degree of flexion of the head as was possible. No interference beyond the effort to check the rapid progress and the freeing of the cord, which was between the child's eyes, was required. As the breech escaped it was supported and carried upward to the axis of the pelvis, allowing it perfect liberty to undergo such rotation as the mechanism might require. In this case the abdomen of the child was directed forward. During the descent of the body, however, it turned, so that the belly became directed backward. With all the care and precautions exercised during this labor, I found, upon introduction of my hand into the vagina, that both arms were stretched upward, with the elbows resting upon the pelvic brim. The head was extended and uncomfortably firm at the superior strait. The face was looking toward the left sacroiliac synchondrosis.

My success in bringing down the elbows below the brim, which had served me so well in several previous cases, entirely abandoned me here. The application of the accepted methods left me much disappointed. Traction, rather forceful, upon the already extended head in the hope of drawing the elbow into the pelvic cavity within reach, failed. The room affording the introduction of the index and middle fingers of the left hand over the back of the child to the shoulder was ample, especially when firm pressure was made upon the head in the suprapubic region. It was, however, impossible, in the crowded condition on the superior strait, to advance the fingers so that the tips might reach the elbow. Considerable time had been consumed in the hope of effecting a manipulation whereby the arm could be brought downward in the vaginal canal without accident. During this time, circulatory changes took place, the pulsations in the cord, our best evidence as to the necessity

for any interference, could hardly be perceived. My anxiety for the safety of the child was great, and unless some advance could be made, death would result in a short time.

In my next attempt, which was fraught with the accident I feared, I succeeded in bringing down the left arm. To accomplish this, I introduced index and middle fingers of the left hand over the back of the child, and locking the finger ends over the shoulder, with the palm of the hand pressed flat against the trunk, I forced the left shoulder downward and as much toward the opposite side of the pelvis as was possible. In this manner I succeeded in reaching near the elbow, and by traction liberating the arm. The force that was exerted fractured the humerus at the middle third.



Schematic Drawing Showing Position of Head and Arms.

Shoving up the body and seizing the trunk with both hands, and by rotation expecting to accomplish the freeing of the arm, was a manipulation that gave me little advantage. With a uterus firmly contracted over the child's head, making rotation an exceedingly dangerous procedure, I would, under existing circumstances, rather risk breaking the child's arm in its liberation, than have recourse to rotation with its dangerous sequelæ and doubtful advantages. After the humerus had been broken, the bringing down of the arm was effected without difficulty.

The most critical stage of labor had now been reached. The pulsations in the cord had ceased and the right arm was yet to be liberated. After an unsuccessful attempt to deliver

the right arm, it became imperative that labor be terminated without further delay. I was wholly unfamiliar with the practicability of applying the forceps with success in such cases, yet it appeared to me the only thing to do under the circumstances. I placed the patient in the lithotomy position, and had the body of the child carried over the mons veneris, as far as could be done without injury to its neck, and supported there by an assistant. The male branch of the forceps was then passed to the left side of the pelvis and the handle depressed against the perineum. The female blade was next introduced and made to correspond with its fellow. I had no difficulty in the application of the forceps, nor in the locking of the handles. The difficulty I encountered was in the application of the tractive force. The perineum offered a great hindrance, as it was impossible to press it back sufficiently far to permit traction in the axis of the superior strait. To overcome this obstacle, and to lessen the danger of severe injury to the maternal parts with a possible tear into the rectum, I incised, rather extensively, the posterior wall and introitus of the vagina to the right of the rectum. With this additional space I was able to deliver the head and right arm without further mishap. The child was resuscitated with much difficulty.

In delivering the head and remaining arm by the application of the forceps I fully appreciated the gravity of the procedure. To apply traction upon the head at the superior strait that would tend to disengage the vertex from behind the pubes, and at the same instant raise the face along the perineum until the chin and other parts of the face would successively pass through the os externum, proved to be an exceedingly severe task. One can never tell, under such conditions, that a forceps will securely grasp the head, because the embrace takes place more in the perpendicular diameter of the child's head, instead of the oblique, a circumstance of great consequence to the success of the operation. Neither does the locking of the handles without difficulty give absolute assurance that the forceps will not slip, for the head can only be partially embraced in this position. From these considerations only one inference can be drawn, and that is that the application of the forceps to the head in a breech labor is an emergency procedure.

ACUTE PANCREATITIS—WITH A REPORT OF FIVE CASES.

BY

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In a recent article, "Digestive Disorders and Abdominal Pain," etc., *Medical Record*, January 20, 1906, I called attention to the difficulty in making a definite diagnosis in cases of abdominal pain located chiefly, at the time of onset, in the epigastrium, by first describing the region as follows:

"The field assigned to me for consideration is comprised in an area irregularly pyramidal in shape, the base not exceeding three inches square in the normal human subject, with the apex made by the common biliary duct, head of the pancreas, the duodenal end of the stomach, and the first portion of the duodenum; while in the base, during health, we have the fundus of the gall-bladder, a portion of the lesser curvature of the stomach, etc."

Following this description of the space in which we find the head of the pancreas, etc., to quote again, I made the following statement: "The difficulty of clinically establishing an absolute diagnosis of disease invading one of the structures mentioned as forming the apex of the pyramid, can readily be understood, and therefore it is manifestly important that all aids in the chemistry of digestion and the excreta be called into play. Unfortunately, from a clinical standpoint, chemistry has not reached that degree of perfection one could wish for, when a definite or absolute diagnosis is demanded."

Chemical analyses, as now understood in pancreatitis, are frequently misleading, and as a result of these conflicting chemical conditions symptomatology must for the present be relied upon by us in urging our patients to submit to an abdominal section which smatters somewhat of an exploration. Yet far better be it that such an exploratory examination be made, with its findings, than to wait for some complex urinary, blood and digestive analyses, which take from a few minutes to the

best part of a day of ultra valuable time in the disease under consideration. This fact is more than evident in those cases of acute pancreatitis accompanied by rapid toxemia, and followed by death in from twenty-four to seventy-two hours.

The chemistry of pancreatic disease is yet in its infancy, and relates chiefly to the feces and urine. The excreta contain in many instances globules of fat and partially digested muscular fiber.

At the meeting of the Association of American Physicians held in Washington, D. C., in May of this year, Dr. J. Dutton Steele, of Philadelphia, discussed the value of Adolph Schmidt's nucleus test for the diagnosis of pancreatic diseases. According to experiments on dogs, when complete degeneration of the pancreas existed, the nuclei in the muscle of meat that has been eaten are not digested. The finding of them in the meat fibers of the stools suggested the diagnosis of absence of the pancreatic juice. Dr. Steele has confirmed this finding of Schmidt's, but has also discovered that certain disturbances of the digestive tract might cause the same phenomena.

Should an analyses of feces be demanded in an acutely toxic case, one can see the loss of precious time waiting for the stools, when an exploration would promptly discover the condition, and save life and time.

Liquid fat has been expelled after normal stools, and the stools are said to be much larger than normal when compared to the amount of food intake. These two excreta evidences can only be considered in chronic pancreatitis. The urine has frequently been cited as containing sugar. I shall report five cases in this paper, none having sugar at any time, either before or following the operation. Dr. Thayer, *Johns Hopkins Bulletin*, November, 1905, reports five cases, none of which contained sugar. With these ten cases, I am inclined to give no weight to the presence of sugar as a factor in acute pancreatitis.

Lipase was shown by Hewlett (see Thayer's article) to be a constant factor in all cases of insult to the pancreas, but to obtain this reaction requires a complex chemical outfit and process, and a period of more than twenty hours' actual preparation. During such a period of time one would lose a brilliant opportunity of demonstrating surgical efficiency as a life saver.

Dr. P. J. Cammidge, *B. M. J.*, May 19, 1906, in speaking of the urinary examinations, describes an improved method of performing his so-called pancreatic reactions. He has sim-

plified a former very complicated technique, but does not contend that the result is positive of pancreatic inflammation, but thinks it of considerable assistance, always advising, though, to control the urine examination by an investigation of the feces.

The difficulty in this test is again that of a precious time consumer, as even this simplified test requires first a specimen of the twenty-four hours' urine, and then an analysis time of a few hours to over night.

Causation.—That the duct of Wirsung is a mode of entry of infection, etc., has been demonstrated on several occasions. One of the hemorrhagic cases reported in this paper presented two small biliary calculi in the duct of Wirsung. Traumatism, alcoholism, and arteriofibrosis are also factors.

Opie has demonstrated a distinct relationship between gall-bladder disease and pancreatitis. Stones in the common duct may plug up the Vaterian papillæ, and a retrograde flow of infected bile may enter the open duct of Wirsung.

Guleke ("Experimental Pancreas Affections," *Archiv. f. klinische Chir. Langenbecks*, Berlin), has been studying on a large number of dogs, the affections of the pancreas induced by injection of bile, blood, and oil in the outlet of the pancreas; also by ligation of its bloodvessels. He states that the disturbances resemble very closely those of acute pancreatitis in man.

Cause of death in the acute cases has been summarized by Doberauer (*Beit. Z. klinische Chir.*, Von Bruns Tubingen, Vol. XLVIII, No. 2) in an analysis of six acute cases, and thirty-five experiments on dogs, as due to a toxin; and Guleke demonstrates, in his experiments quoted above, that in acute necrosis cases death is due to intoxication with trypsin.

In the five cases reported in this paper, three were hemorrhagic, in one of these the pancreas being almost completely destroyed without slough formation, and two resulting in abscess formation. None of these was accompanied by the discharge of any slough, although sloughing is one of the terminations of an acute inflammation of this viscus.

Symptoms.—The onset of this condition is usually a sharp pain, accompanied with varying degrees of shock, rapidly followed in some cases by a profound toxemia, denoted or characterized by a peculiar cyanosis and lividity, with shallow breathing and rapid pulse.

The pain is frequently of a far more intense degree than that of appendicitis or gastric perforation, etc.; in fact, my sus-

picions were aroused in two of my cases by the large quantities of morphine used by the family physician to control pain.

Hiccough is a symptom of relative frequency and persistence; there is vomiting with and following the pain onset. Pain in the back, of an intense splitting character, has been evident in three of my cases. These symptoms, when considered with a history of previous digestive disturbances and gall-bladder or duct invasions, should cause us to give the subject of pancreatitis great weight.

The subsequent manifestations are those of any ordinary peritonitis: *i. e.*, abdominal distention, obstruction due either to pancreatic pressure or intestinal paresis. Later, a tumor formation anywhere in the epigastric, or rather supra umbilical zone.

Treatment.—If in doubt, explore. If upon exploration we meet with a peculiar bloody, beef-broth like serum, or peculiar warty, yellowish-white plaques (fat necrosis) upon the omentum or mesentery (provided no strangulations exist as a cause of this bloody serum), we can safely extend our search to the pancreas.

If an acutely hemorrhagic, enlarged pancreas be found, an incision should be made in its coat of peritoneum, and a puncture or punctures made in the pancreas itself. Gauze, or other drains, should be placed in and about these incised and punctured areas.

If gangrenous or suppurative, drainage sufficiently free to allow of ready expulsion of the sloughing material and drainage of the pus should be provided, either by the anterior route, or in the costa-vertebral angle.

The question of doing a cholecystotomy or not is one that each individual case itself will present for consideration.

In the five cases reported in this paper, the gall-bladder was drained twice, each time for large numbers of stones. In one of the remaining cases it was palpated and inspected without being drained. In the remaining two cases it was not seen owing to the pus collection being well to the left.

The cholecystotomy cases died, while two of the remaining cases recovered, and the third died weeks later from exhaustion and multiple infective abscesses.

Case I.—*Acute Hemorrhagic Pancreatitis.*—Referred to me by Dr. N. Dann in 1901. A female, about fifty-three; rather corpulent; suffering from intense epigastric pain, most pro-

nounced in the gall-bladder region. There was rigidity of the upper zone, but more marked over the right rectus. She had a temperature, varying from 99½° to 102°, and a pulse of 90 to 100. I saw her on the third day of the attack, at which time she was complaining of an acute pain in the gall-bladder region, and presented an anxious countenance, dyspnea, cyanosis, and general lividity, the abdomen being somewhat distended. A diagnosis of cholelithiasis and cholecystitis was made. An incision to explore the gall-bladder was made. Upon incising the peritoneum, a large quantity of bloody serum was expelled, and upon exposure of the omentum and mesentery, multiple white plaques were observed. A diagnosis of pancreatitis with fat necrosis was made, the latter verified by microscopical analysis. The gall-bladder, very much distended, appeared in the incision. Upon palpating it was found filled with small stones, giving one the impression of a small bag of shot.

A cholecystotomy was done, over two thousand three hundred and fifty stones, varying in size from a millet seed to that of a large pea, were removed. The bloody serum was removed and a peritoneal drain employed. No further investigation was made, as the patient's condition would admit of no further manipulation. Death followed in twenty-four hours.

CASE II.—*Acute Hemorrhagic Pancreatitis.*—Miss D., age thirty-two, was taken with a most excruciating pain in the abdomen while at mass, at eleven o'clock on Sunday morning, October 8, 1905. The pain was so severe that she fell, although she retained consciousness. Upon arrival home about noon, she was seen by Dr. Hadden, to whom I am indebted for the case, who gave her a quarter grain of morphia, followed it in two hours with another quarter grain, and again in two hours with another equal dose. I saw her at 7.30 P.M., and found a rigid abdomen and pain only in the left iliac region. Her pulse was 98 and the temperature 100. There was a peculiar lividity and a most anxious mentality. Immediate operation was advised. She was operated upon about eleven hours after the onset of pain, through a Kammerer incision. The abdomen contained a large quantity of beef brothlike bloody serum. The appendix was not acutely involved, but the inflammation was a chronic one, characterized by a central distention and by a distal and proximal atrophy. The appendix was removed and the incision was continued upward, after I had satisfied myself that the pelvic contents were normal. Upon pulling down upon

the stomach and duodenum, the pancreas was readily seen under its peritoneal layer as large as a fair sized fist and of a blue-black color. There was marked edematous infiltration along the ascending colon and right retroperitoneal space.

The peritoneum was punctured in several places to allow of drainage of this region. The peritoneumover the pancreas was incised, a blunt instrument passed into the pancreas, and a large cigarette drain and additional gauze packing introduced; and after a large piece of rubber tissue had been used as a dam to exclude as much of the contents as possible from the general cavity, the abdomen was sutured up to the drain. There was a profuse discharge with a musty odor, and of the same color as the fluid found at the time of the operation, but with an additional mucilaginous feel, which continued for six or eight days, it being necessary to change large abdominal dressing pads four to eight times a day. During the first five or seven days it was observed that areas of fat necrosis would appear on the subcutaneous fat in the drainage gap. Pain of a splitting character in the back was a feature from the first day until the third week. No sloughs were discharged, the drain sinus persisting until the latter part of November. No sugar was ever found in the urine, and no digestive disturbances were noted during the entire convalescence. The gall-bladder appeared healthy, so no cholecystotomy was done.

CASE III.—*Hemorrhagic Pancreatitis: Complete Destruction of the Pancreas: Two Gallstones in the Duct of Wirsung.*—This patient was referred to me by Dr. Mayne of Bensonhurst. Male, about forty-four; previous health good, barring some slight digestive disturbances. Was taken ill eleven days before I saw him, with epigastric pain, so severe as to require about four grains of morphia in thirty hours. Shock well marked; pain in the back; also singultus and vomiting. It was said that he had eaten rather heartily of green corn the day before his attack.

He was under Dr. Mayne's care for a supposed attack of cholelithiasis and cholecystitis, this diagnosis being more and more positive as the days passed, as he gave evidence of tumefaction in the region of the gall-bladder.

When seen by me on September 20, 1905, there was a temperature of 100 8-10° by mouth, pulse 92. He presented the countenance of an extremely ill patient; very restless; intense backache. That he was a hemophiliac was stated by himself,

and that it was a family tendency, three of his family having had bleeding histories, one sister dying from hemorrhage.

It might be stated now that his hemorrhagic history caused Dr. Mayne to keep from operating until a last resort.

Upon examining his abdomen, a large pyriform mass was found that seemed, without question, to be an enlarged gall-bladder. As he had been so great a sufferer, although knowing full well his chances with the hemophiliac history, he requested operation for relief.

We opened his abdomen in the right rectus, coming down upon a small gall-bladder, full of mulberry calculi, that lay well concealed behind the liver, and in the usual site of the pylorus was a mass of exudate, with three or four white bodies simulating small portions of corn. With the corn eating history, the sharp pain and stomachic symptoms, our diagnosis was changed to a gastroduodenal perforation, with occlusion by exudate, and having had considerable hemorrhage in the incision, and bearing his hemophiliac history in mind, it was deemed advisable to do a cholecystotomy and pack about the exudate trusting to nature to produce a cure.

The patient had some relief, but his symptoms of nausea and vomiting continued. This we attributed to the pressure in and around the duodenum. Sixteen hours after the operation bleeding occurred in the incision; packed with adrenalin gauze. Two days later, same occurrence. Three or four days later, bleeding again; slight, easily controlled. Hiccough and vomiting, pain in the back and extreme restlessness continued, small sloughing shreds and free discharge from the drains taking place. Mass subsiding, about the tenth day we were able to pass gauze drains well down into the site of the former mass.

Patient requested to be taken home on the thirteenth or fourteenth day; this was done. About six days after being taken home, he was seized with a very profuse hemorrhage from the wound; packed and checked only to recur in a few hours, death following that night.

Autopsy showed almost complete hemorrhagic destruction of the pancreas, only a very small portion being left; two small stones in the duct of Wirsung; stomach and duodenum negative; gall-bladder and ducts empty; large retroperitoneal clot; no slough.

Commenting upon this case, with the above history, is hardly necessary, as upon autopsy it took some time to liberate the

gastroduodenal portion of the digestive tract from the remains of the original exudate. In fact, for some time it was thought that both perforation and pancreatitis existed. More careful search by Dr. H. Brooks showed but the latter lesion, and even with the change in diagnosis and autopsy findings the proper treatment was carried out.

CASE IV.—*Suppurative Pancreatitis.*—Mr. S., aged 49; Austrian by birth; hard worker; no vicious habits. He has suffered from irregular attacks of sharp shooting pain for the past twenty-two years. These pains would begin in the epigastrium, located chiefly over the gall-bladder site, would travel upward and backward between the shoulder blades; vomited with all these attacks, but never jaundiced.

At 2 A.M. on November 5, 1905, he was seized with an attack, located as all former ones, and more painful than usual in the right area. Three-quarters of a grain of morphia was administered, the pain still persisting for twelve hours. This right-sided pain was followed next day by a dull pain in the left side, in the region of the spleen. At this time a hypodermic was given over the region of the left-sided pain. For three days following the onset pain the abdomen was distended, and following the subsidence of the distention, a mass was felt in the region of the spleen. This mass was at first thought to be an infection from the hypodermic administered in this region.

The patient was observed for ten days before I saw him, during which time his temperature varied from 99° to 104°, with a pulse rapid in proportion. I saw him on the night of the fourteenth of November, at which time he had a temperature of 102°, and a pulse of 108. His abdomen was somewhat distended, the right rectus more rigid than the left. To the left side, about the tenth costal cartilage, a mass about the size of a fist could be distinctly palpated. This mass did not make any excursions upon breathing, as would be expected of a large spleen.

A tentative diagnosis of an abscess associated with the lower pole of the spleen was made. Stating that it was possible that a gastric perforation had taken place, with perigastric abscess walled in, and that while it might be pancreatic in its origin, little weight was given this theory, owing to the extreme left-sided position of the tumor.

A blood count was requested, and made by Dr. Brooks. I herewith incorporate his letter, as it is also of interest from a clinical standpoint as to diagnosis:

MY DEAR DR. ERDMANN: Examination of the blood of Mr. S. shows the following characteristics:

Hemoglobin.....79%
Red corpuscles.....4,720,000 per c.mm.
Leukocytes.....19,320 " "
Blood plates.....Few
Clot formation.....Rapid.

Alkalinity 176 mg. per 100 c.c. calculated as NaOH. (Normal is 266 mg. per 100 c.c.)

The red corpuscles are fairly constant in size, poikilocytes are found in small numbers only, and though the hemoglobin staining is quite irregular and somewhat deficient, no nucleated or degenerated red corpuscles are present.

No malarial plasmodia or pigmented leucocytes are present.

DIFFERENTIAL LEUKOCYTE COUNT.

Polynuclear neutrophiles.....85.75%
Small lymphocytes..... 8.00"
Large lymphocytes..... 1.50"
Mononuclears..... 1.00"
Eosinophiles..... 2.25"
Basophiles..... 0.25"
Transitionals..... 1.25"

The blood therefore shows a moderate high polynuclear leucocytosis, which when taken in conjunction with the clinical manifestations, seems to be highly suggestive of purulent inflammation.

There is no response to the Widal reaction, even in as strong dilutions as 1.10.

There is but very slight response to the idiophilic reaction, but this I have found to be very inconstant except in large and long-standing pus collections.

It seems to me that the tumor involves the spleen, and also extends to the right toward the fundus of the stomach. I was unable to find anything about the gall-bladder.

Briefly stated, the case shows a moderate degree of secondary (symptomatic?) anemia with a moderately high polynuclear leucocytosis which taken with the other clinical signs, seems to me strongly suggestive of pus, probable located in the region of the spleen. There does not seem to me anything satisfactorily

explaining the splenic tumor in the past history of the case, and I should therefore infer that it is of recent origin.

Very sincerely,

HARLOW BROOKS.

Dr. Bruder, the attending physician, requested the patient's son (a physician) to allow me to operate, but a further consultation was had by two very able clinicians in the medical fraternity, both of whom, in the face of the temperature and blood diagnosis, advised no operation.

On November 16, his temperature was 103, pulse 128. The attending physician, Dr. Bruder, again insisted upon operation. The family were now anxious that operative procedure be undertaken, and sent him to me for the work. I operated upon him at 4 P.M in the presence of several physicians, one of them being one of the consultants who advised against such procedure. An incision was made through the outer edge of the left rectus, and upon entering the peritoneal cavity a large mass of exudate, omentum, etc., resembling somewhat that seen in Case III, was observed, but with only one or two indefinite spots of fat necrosis. This mass was carefully punctured with the finger and a pair of forceps, evacuating about one quart of foul-smelling, greenish-yellow mucuslike pus, with here and there flakes of fat necrosis and small bits of tissue. The cavity led down to the tail of the pancreas, and a large cigarette drain was introduced. Free drainage of a musty odor continued for ten days, during which time fat necrosis was observed in the cellular layer of the skin.

The patient was discharged in his son's care on November 29, with but a small sinus. This healed in about two more weeks. The gall-bladder was not exposed during this operation, deeming it advisable not to assume any undue risk by infection.

CASE V.—Mrs. F., 63; mother of a physician; rather corpulent. Was explored by Dr. W. T. Bull three years before for what was supposed to be an appendicitis. Upon opening the abdomen, the appendix was found normal. The incision was then extended upward and the gall-bladder explored. This was also found normal. The incision was sewed up, the patient making a perfect recovery.

There have been some digestive disturbances for the past three years. About three weeks before I was called, she was seized with a pain similar in character to that for which she

had been explored three years before, requiring fairly large doses of morphia to allay the pain.

Although having a temperature that was indicative of pus, and having a tumor present on about the twelfth day that was to the left of the median line in the epigastrium, no surgical weight was given her case. This tumor became superficial enough to cause a distinct visible elevation on the skin over the left rectus, about the sixteenth day. The patient was constantly becoming weaker and more feeble.

On the twenty-first day I was called, and demonstrated pus by aspiration and made the statement that I thought with the previous history she was suffering from a pancreatic abscess. She was operated upon by me on January 9, 1906. Upon incising the skin, about two ounces of pus were evacuated. Deeper dissection was made in a tortuous downward and inward direction, following the sinus that had perforated through the rectal sheath. A large collection was finally evacuated that seemed to be practically in the median line.

The patient had some relief from her pain, but complained of constant backache and nausea; was very restless and would vomit almost daily. Drainage was free and foul. The temperature wave was from 99½ to 102½. In her second week it was necessary to incise an abscess to the right of the right rectus, that seemed to be associated with the lesser peritoneal cavity. A week or ten days later another appeared to the left of the median line, just above the umbilicus. At the end of another week or ten days it was necessary to incise another. She rapidly became more prostrated, and finally died February 24, about eleven weeks from the onset of her disease.

None of these five cases had at any time any evidence of sugar in the urine, frequent analyses being made in four of the cases.

In conclusion, I would call attention to some of the pronounced symptoms:

The marked pain at the onset.

The sharp intoxication of some of these cases.

The dyspnea and lividity seen in many.

The constant splitting backache; and call attention again to the indefiniteness and difficulties in the present state of the chemistry of the urine and feces; and finally to emphasize early exploration when a given set of symptoms, such as are presented in this paper, manifest themselves.

A DISCUSSION ON PERINEAL TEARS.

BY
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THE literature of the subject is enormous if not appalling. Innumerable operations have been proposed and practised and almost every suture devised by man has been tried; all in eloquent testimony to the fact that none of the methods are perfect. A perusal of some of the writings on the subject would tend to confuse the mind of the reader with their intricacies, but when shorn of its complexities and reduced to the basic principles of surgery a perineal tear resolves itself into a comparatively simple matter. Attempts have been made to mend the torn perineum ever since the days of Ambroise Paré.

Among the more notable attempts in this direction were those of Guillemau, a French surgeon of the seventeenth century. In the hundred years following a number of others attempted it with more or less success. Later, Dieffenbach of Germany promulgated a method which served as a model for many followers. The chief characteristics of his operation consisted in "liberating" incisions and large denudations. Modifications of this operation were performed for a long time in France and Germany. In 1855 Marion Sims applied the same simple principles to this operation that had guided him in his treatment of vesicovaginal fistulæ. He freed the operation from any of its useless complications, especially the different lines of suture. As an apostle and as a pioneer he prepared the way for the elder Emmet. Finally, Tait introduced his flap-splitting operation which is now remembered chiefly because it was devised by a famous English surgeon and is seldom mentioned but to condemn. The originality of Emmet's method consists in the suture employed and in the care with which the sphincter is united by a special suture of its ends. While practically all operators have freshened the surfaces to be approximated by knife or scissors, Verneuil used a thermocautery and introduced his sutures after the eschars fell away. While the first attempts

at perineal repair were comparatively simple and direct, later the operation was burdened with all sorts of useless addenda.

It was formerly held by many that the perineal body itself was the principal support of the pelvic viscera; now gynecologists are divided as to whether the muscles or the fascia are the chief supporting factors. In recent years the anatomy of the perineal region has been very clearly laid before the profession by the splendid labors of Spalteholtz, Kelly, and Deaver. The old ideas at one time commonly prevalent that the perineal body was a sort of keystone or buttress for support have passed. The muscles that go to the formation of the pelvic floor are, the levator ani, transversus perinei (superficial and deep), sphincter ani (external and internal), sphincter vaginæ, bulbocavernosus (it and the sphincter vaginæ are sometimes classified as one muscle), and ischiocavernosus. The external sphincter ani is subcutaneous and closely adherent to the skin, attaches behind to tip of coccyx and in front to central tendon of perineum. The transverse perineal muscle arises from the ramus of the ischium immediately in advance of the tuberosity, passes inward and slightly backward, to be inserted in the central tendon of the perineum where it joins the corresponding muscle of the opposite side.

The bulbocavernosus, or sphincter vaginæ, as it is called, arises from the perineal body, and divides into three sets of fibers, the superior which are inserted into the dorsum of the clitoris, the middle beneath the clitoris, and the posterior into the triangular ligament. The deep transverse perineal muscle of the female is thicker than in the male and arises from the mid-part of the ischiopubic ramus. Its anterior fibers with those of the opposite side form a loop anterior to the urethra, its middle fibers are inserted into the side of the vagina, while the posterior fibers enter into the make-up of the perineal body. The levator ani is a thin sheet of muscle which lies superficial to the rectovesical fascia. Its anterior fibers arise from the lower part of the posterior surface of the body of the os pubis. The posterior fibers rise from the internal surface of the ischial spine. Its middle fibers rise from the white line of the pelvic fascia at the angle where the obturator and rectovesical fascia diverge. The anterior fibers of the levator embrace closely the sides and posterior wall of the vagina. The anterior fibers of the levator have their origin from the pubis and constitute what is called the pubococcygeus muscle. The levator has been likened unto a hammock swing-

ing from the walls of the true pelvis. Fibers of the levator are looped round the urethra, vagina, and rectum, holding the vaginal walls in approximation and the lower orifices of the body forward and upward toward the pubes.

The superficial fascia consists of two layers, superficial and deep. The superficial is continuous with that covering the anal triangle and the thighs and abdomen. The deep fascia is in the perineum proper. It is continuous with Scarpa's fascia upon the anterior portion of the abdomen; posteriorly it curves down behind the transversus perinei muscles where it is reflected into and forms the triangular ligament. It is not so strong as in the male, and is continuous with the dartos of the labia majora; the dartos is divided by the pudendal cleft and is continuous with the fibrous coat of the vagina. This layer of fascia is firmly attached to the rami of the os pubis and ischium, going as far back as the ischial tuberosities. It blends with the perineal body and invests the muscles with a fascial covering.

The triangular ligament or deep perineal fascia is stretched almost horizontally across the pubic arch so as to close in the front part of the pelvic outlet. It consists of two dense layers, an inferior or triangular ligament proper, and an upper layer coming from the obturator division of the pelvic fascia. It is larger in the female by reason of the increased diameters of the pelvis but weaker because pierced by the vagina. This fascia blends with the fibrous coat of the vagina. The ischioperineal ligament is that strong portion of the triangular ligament which is attached to the inner sides of the rami of the ischium and extends mesially to enter the perineal body. The anal fascia is adherent to the deep surfaces of the posterior part of the triangular ligament. It is made up of anterior and posterior portions.

The perineum consists of a pyramidal mass of tough elastic tissue, measuring about one and one-fourth inches in height and one and one-half inches in breadth. Into this body enter the sphincter ani, transversus perinei, and some of the anterior fibers of the levator ani along with part of the triangular ligament. The relations of the vagina are in the upper part and anterior portion of the bladder from which it is separated by loose connective tissue; lower down the median part of the anterior wall is closely connected with the urethra. Below the level of the cul-de-sac the posterior wall is in near relation to the rectum, a thin layer of pelvic fascia being interposed. Near

the surface the two canals diverge to make room for the perineal body. Laterally the vagina is enclosed between the levator ani muscles. Toward its termination the ureters in passing downward, inward, and forward lie near the lateral walls of the vagina. Near its termination the vagina passes through the triangular ligament and on its sides are the bulbs of the vestibule, the glands of Bartholin, and the bulbocavernosus muscles.

A number of widely differing views as to what factors normally enter into the support of the pelvic contents are held by the principal authorities of the world. Some hold that the levator ani with or without the aid of the other muscles is the chief power for support. Others ascribe all virtue to the fascia. Some, again, give both muscles and fascia more or less equal credit for accomplishing the work of support between them. Personally I believe that the muscles with the fascia act as a composite diaphragm in closing the lower end of the abdominal cavity and in giving support to the pelvic organs. Of the two factors I consider the fascia of major importance; in the anterior abdominal wall we consider the fascia of the utmost importance in the prevention of hernia. The pelvis should not be radically different.

The anatomy of lacerations naturally depends largely on the direction taken and the distance traveled by the tear. In the simpler forms the perineum is ruptured in the median line at the posterior commissure of the vulva. In incomplete lacerations the structures torn are the vaginal wall, skin and perineal body. The edges of the wound are separated by tension produced by the transverse perineal, deep transverse perineal and levator ani muscles. Deep lacerations extend to the anterior rectal wall and the rectal sphincter. The perineal body, deep transverse perineal muscle, or levator ani muscle may be ruptured openly or subcutaneously. In lacerations at the side of the vaginal orifice one of the bulbs may be torn. Tears may be central or transverse, following the line of cleavage of the muscles. The majority of tears begin transversely and finish anteroposteriorly. The line of rupture often extends upward in one or both vaginal sulci. The hymen is as a rule only torn at its posteroinferior part. The term perineal tear as ordinarily employed is incorrect since it is made to include lacerations of the posterior vaginal wall, perineum, and rectum. We have as they are often classified, three degrees of tears; first, superficial or per-

ineovaginal, including those of the skin and mucous membrane, usually begin at the fourchette and occur often in first labors. Second, vaginal or vaginoperineal tears which extend more deeply but do not involve the sphincter, and may or may not involve the skin. Frequently, there is a transverse tear inside the vaginal orifice with prolongations into one or both sulci. Third, vaginoperineo-rectal lacerations in which the sphincter is involved. These extend upward and are prone to pass to the sides rather than involve the column on the posterior wall of the vagina.

Tears are classified as complete and incomplete; as tears of the first, second and third degree, again we may have the following varieties: slight median lacerating, median laceration involving the sphincter ani, laceration involving one or both vaginal sulci, and subcutaneous laceration. Or they are sometimes classified as external superficial, internal, and combined internal and external tears, and the complete tear of the recto-vaginal septum. Lacerations are often spoken of as superficial and deep. The causes of perineal lacerations are: disproportion in relative size of head of child and vaginal outlet, precipitate deliveries, forceps deliveries, inelasticity of the parts from age or other causes, and too great expenditure of energy and strength on part of the mother.

Chronologically speaking, tears are considered as recent and remote. In the average case there will not be much retraction of fascia. In lateral lacerations extending posteriorly to the rear of the margin of the anus, the triangular ligament is torn through on one side and is free to retract in the direction of its bony attachments. An exception to this occurs when the line of tear is through the central tendon of the perineum and then runs round the sphincter. There is always some retraction of muscles and a good deal of atrophy from disuse in old cases. The line of scar in the vagina indicates in a way the nature of the tear. The vaginal opening in these cases is patulous like the open mouth of a sac without a string, as Emmet was fond of saying. When the tear has gone through the sphincter the ends of that muscle may retract until the muscle is only a short crescent posterior to the anus. The vaginal canal is usually capacious so that all the fingers of the hand may easily be inserted at once. In complete tears the rectal and vaginal tears are thrown into one. The vulva appears elongated posteriorly and is open. The rectum, vagina, bladder, and urethra

tend to downward and backward displacement. The anterior and posterial vaginal walls are not held together as normally. The extent of the tear can be determined by noting the remains of the hymen on either side. The perineal skin may be virtually intact and yet a large subcutaneous tear exist. In tears in which the deep transversus perinei and the levator ani are not torn partial compensation is provided by a forward displacement due to the traction of those muscles.

Endometritis and cervical tears are usually present as complications—symptoms due to cystocele and rectocele are frequent. There is often some difficulty in walking. Referred symptoms of many sorts are present. In the complete tear there is incontinence of gas and liquid feces. Bad perineal tears unattended to, result in many evil consequences for the patient, several of them constituting vicious and self-perpetuating circles. Lack of proper support for the posterior vesical wall allows a cystocele to form, the muscular tone of the bladder may be in part lost, the patient may have to lift up and support that part of the bladder with her fingers at each act of micturition. Residual urine may be left in the bladder; this undergoes decomposition and cystitis and calculus may result. With each act of defecation the rectum is pushed forward into the vagina, this promotes constipation, which in turn increases and aggravates the rectocele. Occasionally there are varying degrees of uterine prolapse or malposition, the organ becomes congested and a catarrhal endometritis is set up. The vaginal walls may roll out and become edematous, owing to the open condition of the vulvar orifice, air may enter the vagina and on slight change of position be noisily expelled. Backache, bearing-down sensations, constipation, and nervous disturbances may come on. Some cases heal so that to a casual inspection everything seems all right; but if the patient bears down, a rectocele and a cystocele bulge the vaginal walls, and the anus can be everted by pressure of the fingers in the vagina. For purposes of prophylaxis one should not needlessly resort to the use of forceps. Precipitate labors should be avoided when possible, the progress of the head should be retarded and the mother instructed not to bear down too violently as she may at times be inclined to do. A correctly performed episiotomy, one in which the incision is carried backward and to the side of the sphincter may be of value, in cases where a serious tear would be otherwise inevitable, by substituting a clean-cut incision for a badly lacerated

wound. G. H. Noble suggested and carried into practice a method of lessening the risk of a tear by the use of adhesive plaster strips so arranged as to restrain the perineal region from bulging and stretching too rapidly and freely. Preliminary to operation the patient should have had two or three days of preparatory treatment—hot baths, spare diet, thorough purgation by salines and careful cleansing of the part. In cases of complete tear especially should one attempt to get the bowels as nearly empty as possible in view of the subsequent post-operative treatment. By frequent douches and other appropriate treatments one should alleviate and cure if possible any existing uterine or vaginal discharges. This method naturally applies to the intermediate and the late operation and is not applicable to recent cases with intermediate operation.

The chief principle of repair consists in restoring as nearly as possible the normal anatomy of the part by the union of structures whose solution of continuity was produced primarily by a tear. The area to be denuded is usually an exaggerated outline of the scars produced by the laceration. This scar tissue and a part of the redundant vaginal wall lining the dilated and relaxed canal must be excised. In reducing the size of the vaginal outlet one must resect slightly more tissue than seems actually necessary, inasmuch as the vaginal canal will dilate, and after the operation wound has healed will be larger than at the time of suture. Generally speaking the present-day methods of operation consist of either posterior median or posterior bilateral removal of superfluous tissue followed by suture.

Some gynecologists, as G. H. Noble, in part isolate and separately approximate by suture the different muscles and fasciæ involved by the tear; most men, however, attempt to unite and restore the parts to something of their normal anatomical positions without the individual dissection and suture of the different parts involved.

The consensus of opinion of many operators is that repair should take place as soon as possible after receipt of the injury. We know that this principle is true in the treatment of the other accidents and injuries of life, and what holds true in one part of the body should in a measure obtain elsewhere. True, an elaborately planned operation can be carried out with better technic than one performed impromptu and without the necessary instruments. In the recent case the work may be often done without an anesthetic. Troublesome oozing from above

can be temporarily held in check by a gauze sponge pack. Instruments and suture material can be improvised. Spoons can be bent to use as retractors; darning or other large needles can be used. Linen or even cotton thread will do for suture material. Care should be taken to approximate all parts correctly and to leave no pockets to hold blood or serum and infect the wound. The rectum, if torn, can be sutured from the inside, having the sutures near each other ($\frac{1}{8}$ inch apart) and penetrating only the mucosa. The other sutures should be carried deep enough to secure and approximate all divided structures. Especial attention should be paid to the repair of the injury from the vaginal wound. The ends of all unabsorbable sutures should be left long to facilitate removal. Use silkworm gut for the removable sutures and catgut for the more inaccessible parts. In this class of cases one can often insert sutures while waiting for the expulsion of the placenta, tying them after the placenta has come away. After waiting from twelve to twenty-four hours one can often do a more satisfactory operation. Some of the edema will have disappeared; with plenty of assistance at hand, the patient can be anesthetized and time can be taken to do the work carefully. Careful asepsis of wound should have been maintained prior to operation. Lacerated and badly bruised tags of tissue should be removed with scissors. In the suturing of recent cases one should be careful to not insert the suture too near the edge and to tie loosely, otherwise with the advent of edema the most of them will cut their way out.

The intermediate operation is done from five or six days to two or three weeks after labor. It is well not to wait too long, as the involution of the uterus may be interfered with. A well performed operation at this period usually succeeds. Local anesthesia will suffice in many of these cases. The granulations must be removed with the sharp curette. If considerable time has elapsed allowances must be made for the shrinkage of the wound. In suturing the same general principles observed in suturing recent injuries should be observed, care being taken not to pass the needle too near the edge. In complete tears both recent and intermediate the rectal sphincter should preferably be united with deep buried sutures of catgut and these reinforced with a deeply passed suture of silkworm gut.

The old tear comes to the surgeon after cicatrization is complete, the depth of the wound has filled with granulation tissue, muscles and fascia have retracted, the epithelial covering has

been restored, the surfaces are flattened, and at a casual inspection it is difficult to estimate the extent of the original tear.

In the operative treatment of tears the denudation outline is usually based on and is an exaggeration of the scar outline which indicates the extent of the original tear. Emmett's typical denudation is shaped much like the capital letter M provided a bar was drawn across the base and all of the outlined tissue was removed. It is not usually necessary to go to a height of more than one and one-fifth inches in denuding the sulci according to Kelly. The denudation is sometimes made in the shape of a sharply curved crescent, butterfly shaped, or again in a triangular denudation at the center. In all cases the lowest lateral remains of the hymen and the crest of the rectocele are the landmarks upon which the denudation is based. To open the sulci and make the lax vaginal tissues taut to facilitate the outlining and denudation, the rectocele, crest and the sides of the vagina can be drawn apart by traction on the bullet forceps fixed at these points. Some remove the tissue in strips, others remove in one entire piece. One has to use some care in order to save the rectum from a perforation. The gloved finger inside of that viscus insures a greater degree of safety. In incomplete tears it is best to begin the denudation at the base, that the bleeding may be less troublesome. It may be said in passing that all do not remove the flaps obtained by denudation; Waldo of New York dissects from below upward an apron-shaped flap that unites the two sides by a single figure-of-eight stitch and lets the flap fall back in place.

In cases of complete tear, where one wishes to turn downward and inward flaps to fill in the rectal defect and to protect the wound from the danger of rectal infection, the denudation should be begun at the top or sides. Some consider it advantageous to work with the operation field under continuous irrigation to remove the blood. It sometimes happens that a bleeding point will need to be caught with forceps but ordinarily the coaptation sutures may be made to control all bleeding. The bared areas extending up in the sulci are first closed by suturing with catgut or silkworm gut, the ends being left long in the latter case, and the sutures secured by knotting or shotting. In introducing and passing these sutures they should take a V-shaped course, the point of the V being downward and backward at the bottom of the tear so as to include in their grasp muscle and fascia that might be missed in case they went directly back-

ward, parallel with the plane of muscle and fascia. After the lateral sutures have been introduced and tied the crown suture, so-called, is introduced. It should enter near the highest point of denudation on the side, pass downward to the bottom of the sulcus, emerge and pass through the tissues in front of the rectum just below the crest of the rectocele, enter the lateral wall of the vagina at the bottom of the opposite sulcus, and emerge at a point opposite that of entrance. The V-shaped arrangement of the sutures downward and backward should still be preserved. Two or three more sutures should be introduced from side to side, and perhaps one or two in the skin over the new perineum. The sutures, if properly placed, will in most cases approximate a sufficient amount of muscle and fascia to secure results well worth the while. If there has been any very considerable retraction of muscle or fascia, the retracted tissues can be drawn into the edge of the wound by bullet forceps so that they may be included in the grasp of the ligature. The line of suture when completed in the repair of the incomplete tear is like the capital letter Y. The ends of the nonabsorbable sutures are usually left long. Some bunch them together and turn them up into the vagina. Others secure them in a bundle on the skin of the perineum so as to prevent their irritating effect on the vagina.

When the rectal sphincter has been torn asunder the defect in the rectal wall, if there is one, should be closed by turning down a flap from above or by turning in flaps from the sides and uniting by buried sutures, or the edges of the rent can be freshened by beveling them from the inside and then uniting them, or, as G. H. Noble has suggested and practised, the anterior rectal wall can be dissected free from the vagina and brought down to close the defect and protect the wound from rectal infection. The ends of the sphincter must be sought out, isolated and united with buried ten or twenty-day chromicized catgut. There is usually a little pitting or corrugation in the skin which denotes the position of the end of the torn and retracted sphincter. These sutures should be splinted by a deeply passed suture of silkworm gut and then the tear which has been changed from the complete to the incomplete variety can be repaired in the manner before described.

In inserting sutures into skin or mucous membrane enter and come out very near the edge to prevent inversion, but carry the needle far enough back beneath to get a good bite of tissue. All unabsorbable sutures used should be counted and a

record made of the number in order that when the time for removal comes no suture may be left behind.

The subject of after treatment in cases of complete tear is one of great importance. Our leading authorities differ widely in their views on this subject. Some at first commence the administration of saline purgatives a short time after operation and secure daily evacuations. Others—perhaps these are in the majority—wait from three to five days and then give a purgative. Kelley practises a modified form of starvation combined with the locking of the bowels from twelve days to two weeks or longer. I have tried this method in several cases with splendid results. By free purgation, scant diet, and colonic lavage prior to operation I reduce the bowel contents to a minimum. After operation a small amount of morphia relieves the pain and removes all desire to evacuate the bowels. For thirty-six hours only water is given by mouth. After that time albumin is given, four drachms every three hours; after the fourth or fifth day the amount is increased to six drachms. Albumin should be used because it is practically all digested and absorbed, hence leaves but little residue. Other forms of liquid nourishment are not satisfactory—milk is perhaps the worst food of all. It forms hard scybalous fecal masses. The evening of the fourteenth day or later a large dose of liquorice powder is given, followed the next morning by a pint of linseed oil slowly and carefully thrown into the bowel through a large soft rubber catheter which has been gently passed through the sphincter. The bowels must be moved with the patient lying on the side in Sims left lateroprone position. A kidney-shaped basin can be pressed against the nates to receive the bowel movement. There is no doubt but what it requires considerable courage in a patient to undergo the above outlined regimen, but the patient who is really anxious to get the best result, and who has the efficient moral support of her doctor and nurse, will pass through the two weeks with a fair degree of comfort. At first most patients will beg and even cry for solid food, and it requires considerable firmness on the part of those about them to resist their entreaties.

ABORTIONS.

BY

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ABORTION or miscarriage indicates interruption of utero-gestation before the fetus is viable, as distinguished from that interruption which occurs during the last trimester of pregnancy when the infant expelled is viable.

By some the term "abortion" is applied only to interruptions which occur before the time of "quickening," and the designation "miscarriage" is applied to those which occur between the fourth and seventh months of gestation. All cases, however, where the ovum is expelled before the sixth month, are to be regarded as abortions, and will be so considered by the writer in discussing this subject. This may occur at any date. Statistics would indicate, however, that four-fifths of all abortions occur between the second and fourth months, and seven-eighths of these four-fifths occur during the third month.

It is extremely difficult to determine, with any degree of accuracy, the frequency with which abortions take place. One of the reasons for the difficulty of determining the relative frequency of abortions to completed pregnancies is due in a great measure to the inattention of patients to their menstrual functions. After several weeks, say eight or ten, a larger quantity than usual passes, mixed with what they term clots, which they imagine is only an overflow, due to suppressed menstruation, when in reality they have aborted.

The following table may be considered a fair average:

	Abortion	*Full-term Labors*
Hagre.....	1 in	8 or 10
Devilliers.....	1 in	3 or 4
Whitehead.....	1 in	7

After careful research, I am inclined to consider Whitehead's statistics more nearly correct than the others I have mentioned. I shall not take up the time to go into the etiology of this grave

condition, except in one instance—namely, in subjects who have syphilis. This pathological condition causes more abortions, whether the disease be in the male or female, than any other condition, except possibly criminal abortions, which latter we will not discuss in this paper.

The history of one abortion predisposes to another, so it behooves us to prevent, as far as possible, all abortions by proper prophylaxis, such as rest in bed at critical periods, mental and bodily rest, and, when the abortion has taken place, proper stimulation of the uterus.

The symptoms of this condition need not be considered here, but we will pass to the question, Is the abortion inevitable? In endeavoring to answer this question, three points are to be noted: (1) The character of the pains; (2) dilatation of the cervix; (3) the amount of hemorrhage.

1. If the pains are weak, occurring at long intervals, and are controllable by rest in bed and mild opiates, the misfortune may be averted; but on the contrary, when the pains are strong and occur at frequent intervals, with the cervical canal slowly dilating, the abortion may be considered inevitable.

2. In the dilatation of the cervix, it has been noted that even when the external os has been so dilated that the lower end of the ovum could be felt through it, nevertheless, gestation has gone on to labor at term. But such condition is extremely rare and cannot be relied upon; consequently, when dilatation is present, it should be regarded as a working rule that abortion is probably inevitable.

3. The amount of hemorrhage is of the greatest moment in the handling of these cases, and must be taken into consideration. Cases will present themselves where there have been no appreciable pains, where the cervical canal and its orifices are contracted, but where the blood loss calls for prompt interference. If the amount of blood lost on any one day be small, yet occur time after time, it would be best to pack the vagina firmly with gauze to control the bleeding, even if this procedure does terminate the gestation, which it is apt to do.

The treatment of abortion varies according as the abortion is (1) threatened, (2) progressive, (3) delayed, (4) incomplete, or (5) recurrent.

1. In threatened abortion, where there is a slight degree of hemorrhage, little if any pain and the cervix undilated, the administration of sedatives to relieve the pain and contractions,

rest in bed, with absolute mental and bodily quiet, will frequently avert the danger.

2. If the pains are persistent and the cervix expanding, or if there is a free or frequently recurring hemorrhage from the uterus without apparent effort of the same, we may consider the abortion as inevitable and an active line of treatment should be adopted. Our endeavors should be so directed as to procure uterine activity, restrain hemorrhage, and secure complete evacuation of the uterine cavity. The control of the hemorrhage is of paramount importance, and the measures adopted must be to secure as aseptic a delivery as one at full term. With this idea in mind the treatment may be initiated by giving a bichloride of mercury douche of from 110° to 120° F., lasting for at least half an hour. This has a most notable influence upon the uterine muscle by stimulating and strengthening the contractions.

3. If the uterus cannot be easily and rapidly emptied, our next thought is the arrest of the hemorrhage, which is best accomplished by the introduction of aseptic gauze into the vagina, first packing it tightly behind the cervix, then filling the vagina full, in an endeavor to make firm pressure. This reacts to the benefit of the patient three-fold: first, in an endeavor to control the bleeding; second, in stimulating contractions of the uterus; and, third, in dilating the external os, at times, enough to permit of the expulsion of the entire ovum. The packing should not be left in the vagina longer than twelve hours.

Should the ovum not be expelled and the membranes are ruptured, we must resort to the immediate evacuation of the uterine cavity. The unruptured sac, which is detached from the uterine wall, can often be pulled down into the vagina with the finger. Even if the sac is ruptured, the membranes can usually be removed, owing to their position low down in the cervical canal. When the ovum lies entirely within the uterine cavity, it is much more difficult to remove, but frequently under anesthesia the finger can be carried up through the canal and the cavity can be cleared in this manner. If it is impossible to remove all in this way, the left hand should grasp the fundus of the uterus above the symphysis pubis and force the uterus downward until the index and the middle fingers of the right hand can be introduced into the uterine cavity. The fingers within the uterus must be passed carefully but firmly

around the entire circumference of the ovum so as to detach it and its membranes, especially in the placental area, completely from uterine attachments.

There are patients whose abdominal walls are so thick that it is impossible to press the uterus down by the hand applied in the hypogastrium to within easy working distance of the fingers in the vagina. In cases of this kind, and those in which it is impossible to empty the uterus with the fingers, the patient must be anesthetized, placed upon an improvised operating table, the knees flexed upon the abdomen and held by assistants; the vagina thoroughly cleaned and sterilized, tenaculum forceps applied to the cervix, which is drawn downward until the external os appears near the vulva, from which point the uterus may be evacuated. In every instance when the hand or fingers have been introduced into the uterine cavity, a hot antiseptic douche should be given. It washes away clots which have been left in the cavity of the uterus, it is a prophylactic against sepsis, and also stimulates the uterus to more energetic contractions.

When the abortion is too early to permit of sufficient dilatation for the introduction of the fingers, we must resort to forcible dilatation and a thorough emptying of the uterus. It is exceedingly important to examine the cavity with the finger to determine the completeness of the operation.

4. After satisfying ourselves that the cavity of the uterus is entirely empty, it should be thoroughly washed out with a hot antiseptic solution, and if there is any odor, especially in the early months, an application of equal parts of compound tincture of iodine and glycerine should be made, by means of a probe or uterine applicator wrapped with cotton for this purpose. Finally, we should introduce a narrow strip of sterile gauze into the uterine cavity, carrying it up to the fundus, and then pack the vagina tightly with sterile gauze. After twelve hours all gauze should be removed from the uterus and vagina and a sterile douche given. The gauze is not to be reintroduced. A sterile douche should be given every twelve hours until the patient is convalescent.

When the cervix is only partially opened and hemorrhage is present, the abortion is incomplete. If the bleeding is severe, prompt evacuation of the uterine cavity by mechanical means is most important. When we find the cervix closed and the hemorrhage so severe as to threaten the life of the patient, the

indications are to at once empty the uterus by forcible dilatation and evacuation.

In cases of abortion where sepsis is already established, as shown by elevation of the temperature and a rapid pulse, or by the rapid pulse where the temperature remains near the normal, active mechanical interference is definitely and urgently indicated. The uterus should be thoroughly and completely emptied by the aid of placenta forceps. In this instrument we have a safe and efficient means for removing every portion of the ovum and membranes, with the least possible risk and danger to the patient. The curet should be sparingly used, if at all, in this class of cases, with exceeding caution, and it is not the instrument of choice. And while on this subject we may, with propriety, make some reference to the curet, which is at one and the same time, one of the most useful, yet possibly the most dangerous instruments carried in the obstetric bag. The important objection that can be offered to the use of this instrument in cases of this nature, lies in the destruction of tissue which nature has given the patient to protect herself, by removing the thin mucous membrane, and leaving a raw, bleeding surface, suitable for the planting of any of the infectious organisms; and when these are once sown, the harvest is so certain and results so costly to the patient, that a warning should be given, hence I urge that other means be used in handling these frequent and important cases. And, again, the great danger, owing to the very soft condition of the uterus at this time, is that no matter how careful or how dexterously the curet may be employed, there lies always the possibility of tearing a hole through the uterine body, by the point of the instrument brought, by accident, in contact with a thin or friable area.

After satisfying ourselves that the uterine cavity is entirely clear, it is proper to give a hot intrauterine douche of bichloride solution, 1 to 6,000, followed by an application of 50 per cent. solution of Churchill's iodine, and, finally, to carry a strip of sterile gauze to the fundus for drainage. When we have completed this procedure, it is best to aid nature in the effort to antagonize the toxins which the uterus may take up.

When we consider the grave conditions which may arise following an abortion, would it not be wise to look briefly into the pathology and bacteriology which may be present and come as an aftermath in cases of this kind? For a week or more after delivery, the point of insertion of the placenta is rough

and elevated above the surrounding tissues, and covered with dark shreds of blood and mucous membrane. Care should be taken that this condition is not mistaken for inflammation or retained placenta and an endeavor made to remove it, which is sometimes done when the curet is used. As a result of the injury done to the uterus or vagina during or after delivery, the action of bacteria, which may have gained access to the tissues, may give rise to inflammatory conditions of both destructive and necrotic changes. These conditions may be confined to the uterus, but they also may induce serious alterations in surrounding organs. The peritoneum may become involved, septicemia or pyemia may result, with consequent serious illness, or even death to the patient. The pathological reaction excited by bacterial growths in the cavity and tissues of the puerperal uterus, as well as in more remote manifestations in other parts of the body, are the results of either infection or a toxemia.

The more important bacteria found in the vagina are the streptococcus, staphylococcus, bacillus coli communis, gonococcus and bacillus ærogenes capsulatis, and it has been proven that any of these organisms may penetrate the tissues of the uterus and give rise to infection. The streptococcus pyogenes is the most serious and frequent bacteria associated with infection following abortion and normal parturition. Our every effort following abortion should be directed toward the prevention of infection resulting from some of these microorganisms, but, unfortunately, at times, we are compelled to meet sepsis face to face, and when we do our aim should be to battle with it upon a scientific basis.

CONTRACTION AND SHORTENING OF THE UTERO-SACRAL LIGAMENTS. A SUGGESTION AS TO ETIOLOGY AND TREATMENT.

BY

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THIS paper embodies the results of personal observation in a certain number of cases of such a character as to lead me to consider the results worthy of confirmation or refutation by others and it is with this desire that I offer this report.

On December 15, 1905, I read, before the Southern Surgical and Gynecological Association, a paper entitled, "Chronic Endocervicitis (Endotrachelitis), A New Method of Treatment with New Instruments," and the facts embodied in the following paper were incidentally observed in connection with my work on chronic endotrachelitis. Before coming to the original thoughts which I wish to offer for your consideration, I desire to consider the anatomy of the uterosacral ligaments and the commonly-held ideas as to this subject.

Thanks to the work of Bovée and others, our ideas, once of the vaguest, regarding the anatomy and physiology of these ligaments, has necessarily undergone revision. No one who has had operative experience with them, either from below, through the vaginal vault, or transperitoneally, can longer consider them merely as vague peritoneal folds dubbed ligaments by courtesy, as it were, but must realize that they are as definite and characteristic structures as are the round ligaments.

Rouget,[1] Testut[2] and Nagel[3] all have stated long ago positively that they contained muscular tissue in sufficient amount to render them physiologically active, and I must agree that my operative experience leads me to believe that Deaver's description of them is the best considering its comprehensiveness and brevity. The muscular tissue is sufficiently abundant to be often spoken of as Luschka's muscle. Deaver's[4] description is as follows:

"The uterosacral ligaments are flat muscular bands, which

extend from the uterus at the level of the internal os, beneath the layers of the rectouterine ligaments, to the sides of the sacrum, opposite the lower borders of the sacroiliac articulation. In the first part of their course they are in relation with the lateral walls of the pouch of Douglas and finally run on either side of the rectum near the junction of the sigmoid flexure and the upper portion of the rectum."

He speaks, in the above description, of the rectouterine ligaments, and referring to them on the preceding page (371, Vol. III), says:

"The false posterior or rectouterine ligaments, which are composed of peritoneum, are two single serous layers, which pass backward from the posterior surface of the uterus and vagina to the upper portion of the rectum, where they are continuous with the peritoneal coat of the rectum. These folds of peritoneum form the lateral boundaries of the pouch of Douglas. External to each of these false ligaments are found the true, or muscular, uterosacral ligaments, extraperitoneal connective tissue, and anastomosing branches of the uterine and hemorrhoidal vessels."

From these two quotations it is very evident that Deaver considers, I believe correctly, that the uterosacral ligaments are apart from and much more important than the posterior peritoneal folds, loosely but commonly spoken of as the ligaments. For a more detailed description of the sacral insertion of these true ligaments I would refer those interested to Bovée's[5] description of them.

Granting the correctness of this anatomical description, it is easy to understand that the uterus may readily be actively drawn into the position known as retroposition, or retrocession, a position characterized by a drawing of the uterus as a whole far upward and backward into the hollow of the sacrum, and usually accompanied by a greater or less degree of anteflexion, by a contraction of the muscle fibers, Luschka's muscle, in these ligaments.

As to the prevalent treatment heretofore adopted, there have been three principal lines of treatment followed in addition to the "expectant." The great majority of physicians, especially the general practitioners, if they diagnosticated the condition at all, have relied upon various forms of tamponade, dependent for their action either upon the medication carried by the tamponade, or upon their method of bestowal of the individual component tampons. Also, in addition to the tampon treatment some authors advise massage of the contracted ligaments. Turning, on the other hand, to their treat-

ment of the relaxed uterosacral ligaments, one can but admire the absolute impartiality with which they also advise massage for this opposite lesion. It reminds one of the classes in the women's gymnasia, in which fat and lean women may be seen in the same class, taking the same exercises, some to get fat and some to get thin, and it is probable that here, as there, there must inevitably be a small percentage of successes, but not such as to enable any valuable conclusions to be drawn with reference to future cases.

The second faction have advocated and practised with moderate success, as I know from personal experience, but with a considerable percentage of recurrences, the vaginal section of the thickened, contracted ligaments.

The third, and smallest faction, have, following Burrage, cut the ligaments transperitoneally, through an abdominal incision. This procedure may, of course, be justifiable when the abdomen is already open for coexisting lesions but never for this condition alone. And not because this condition is not sufficiently distressing, because we all know that it is a very painful malady, giving rise occasionally to great disability, the symptoms having been so well considered by nearly all makers of text-books and many writers of papers, as to make a detailed description here a work of supererogation.

We are now to consider the question of etiology of contraction of the uterosacral ligaments. Among the older books, Thomas and Mundé[6] gave no etiology whatever, except "pelvic peritonitis, often unsuspected by the patient." Dudley,[7] in his edition of 1902, says: "The organ (uterus) may be drawn upward and backward by shortening of the uterosacral ligaments, which results from inflammation, and which usually induces a troublesome form of anteflexion." Montgomery[8] speaks of shortening of the uterosacral ligaments as being due solely to inflammation.

So far as I can judge from my reading, the authors have been in harmonious agreement in believing that the cause of the shortening and coincident thickening of these ligaments, was due to peritoneal irritation in or near them, with fibrous overgrowth and consequent thickening. Here my observations lead me to an entirely different conclusion.

Wherever possible nature has made wise provision for rest as soon as any part becomes inflamed. The inflamed joint becomes more or less immobilized; in peritonitis the bowel be-

comes paretic, and other numerous illustrations might be cited. In health the uterus is extremely mobile, moving with practically every movement of any magnitude made by the upright body, especially in walking, stooping, riding, and the like, and in my work some years ago in measuring the effect of respiratory diseases upon the pelvic viscera,[9] I was able to show to what extent the uterus must be affected and moved by normal respiration even during the hours of recumbency and sleep.

If, then, it is so mobile normally, we have reason to expect that nature has provided for its rest in disease. This we find to be true in all forms in which motion would be painful or harmful. For example, it is obvious that some forms of inflammation, in certain localities, would be much more benefited by immobilization than others. Inflammation affecting the peritoneal coat or the outer layers of the uterine musculature, or any part of the cervix, would be much more affected by movements of the uterus as a whole than would any inflammation of the corporeal endometrium. As a matter of fact we know that observation bears out this view. In metritis or perimetritis the uterus early becomes restricted in its mobility, but not noticeably so in uncomplicated corporeal endometritis.

Personal observation leads me to believe that in a certain proportion—I do not say all—of the cases in which the uterosacral ligaments are found contracted, thickened and sensitive to the touch, they are so as the result of an active contraction of their muscle fibers, the object of which contraction is solely the defence of an inflamed cervix, aiming to draw it upward and there fix it, so lessening its irritation by the ordinary bodily and respiratory movements and minor traumatisms. If, therefore, we take this view of the matter we see that, like so many other conditions once considered disease entities, this contraction of the uterosacral ligaments becomes only a symptom of some deeper trouble.

This defensive contraction usually is found in connection with one particular form of cervical inflammation, namely, endotrachelitis. Why it does not occur in all cases of swollen, eroded, lacerated cervices I have been unable to determine, unless it be due to the fact that such conditions are not usually sensitive nor easily affected by traumatisms of a minor degree and hence need such a defence less than does the sensitive tender cervix of endotrachelitis.

If this contraction of these ligaments is merely the symptom

of an endotrachelitis, it is obvious that the methods of treatment heretofore must fail of permanence unless the endotrachelitis is cured at the same time and if the trachelitis is so treated and cured it must be obvious that the contraction must subside without other, independent, treatment.

To illustrate both the nature of my observations and the results to be obtained by following the above line of treatment, and curing the endotrachelitis and disregarding the ligamentary contraction, I have chosen a typical and very obstinate case to report.

CASE.—Series IV, No. 265. First seen at the Out-Patient Department of the Free Hospital for Women, July 15, 1901. Aet. 24; married at 21; one child, lived seven weeks; one miscarriage, followed by curettage for hemorrhage; family and past history irrelevant and therefore omitted from this report. The physical diagnosis was laceration (slight) of cervix and perineum with *slight descent of the uterus*. Right tuboovaritis. Operation was advised and, the Free Hospital being temporarily closed, as is our custom each summer, she was operated upon by Dr. Burrage at the Carney Hospital on July 22, 1901, the lacerations being repaired and the right ovary and appendix being removed.

When next seen, January, 1902, at my clinic, she was entirely relieved of her former symptoms and had an excellent result from the plastic operation, but was suffering from a severe backache of a quite different and more intense character than that from which she had formerly suffered. The physical findings were: cervix and perineum well repaired, with good union; right side of pelvis negative; *uterus high up and well back, but in approximately normal axis*; left ovary high up and a little hard; left tube slightly thickened; marked endotrachelitis; both uterosacral ligaments shortened, thick and sensitive to traction.

From January, 1902. she was under practically constant treatment at my clinic, her symptoms apparently entirely dependent upon the contraction of these ligaments, and in spite of various medicaments applied upon various forms of tamponades, little or no effect, or at most temporary abatement of symptoms, was accomplished. During all this time the endotrachelitis had persisted although constantly treated. In September, 1905, I finally persuaded her to permit a cervical curettage in accordance with the technic and with the instruments described in the above-mentioned paper upon chronic endotrachelitis,[10] with the result that in less than two weeks she was entirely cured of all symptoms, the uterosacral ligaments were completey relaxed, the uterus once more normally mobile, and on sending for her during the past week (August 1906), eleven months after the cervical curettage, she reports

herself entirely free from any recurrence of symptoms and the only departure from normal found on physical examination of the pelvis, was a slight, evidently transient enlargement of the left ovary.

The italicized portions of the above history are worthy of note. When first seen, in 1901, she had a right ovary so badly inflamed as to necessitate its removal the following week, and also appendical disease, we may presume, although the appendix may have been removed as a matter of routine. My own notes say nothing on this point. But at any rate, with this ovarian condition it would seem fair to assume the existence of a certain degree, past or present, of pelvic peritonitis, and yet the uterosacral ligaments were not contracted, but, on the contrary, were so far relaxed as to permit a slight degree of uterine descent. Seven months later, however, when the lining membrane of the cervical canal had become inflamed, although to be sure there was reason to believe there might still be some pelvic peritonitis, we first find these ligaments rigidly contracted so that at that time the characteristic anteflexion had become faintly suggested and afterward became decided, hence the uterus was drawn up from its former descent into a typical retrocession, thus producing the typical backache.

This, and many similar, though perhaps less marked, cases, an which the tampon and other treatments had not been so long and so faithfully used, but in which the cure of the endotrachelitis has been promptly followed by the disappearance of all contraction and thickening with the coincident sensitiveness of these ligaments, lead me to believe that in those cases in which contraction of the uterosacral ligaments and endotrachelitis coexist, they stand in the relationship to each other of, respectively, effect and cause, the uterosacral contraction being actively muscular and defensive in its nature, intended to defend the cervix against movement and traumatism. The thickening in such cases as that above reported is due to the contraction of the muscular fiber, as it disappears promptly upon relaxation.

If this last assumption of relationship is granted as correct, the only successful remedy will be that which will most promptly remove the cause; and upon that subject I have fully expressed my views elsewhere. One other consideration, however, must not be overlooked. Two or more causes may be acting in coöperation and fibrous thickening of what Deaver

calls the rectouterine ligaments may coexist with, or eventually supplant, the muscular contraction of the true utero-sacral ligaments in which case orthopedic section and appropriate after-treatment of the ligaments would be necessary in addition to, or instead of, the above or any other treatment.

In conclusion I would again ask that the members of this Association do not consider the above as a dogmatic statement of fact, but as a suggestion of which I beg your confirmation or refutation.

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IN MEMORIAM

MEMORIAL ADDRESS ON THE LIFE AND CHARACTER OF DR. LEHMAN HERBERT DUNNING.*

BY

HUGO O. PANTZER, M.D.,

Indianapolis.

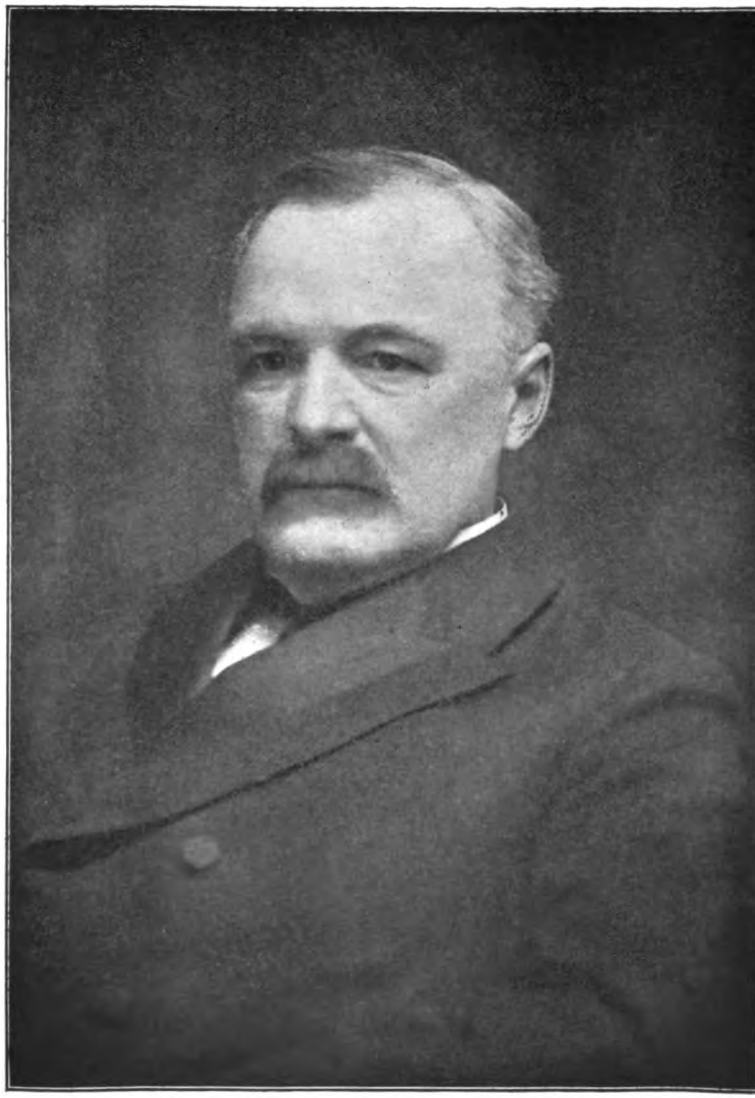
SINCE our last meeting death has taken away one of our most active and distinguished fellows in the person of Dr. Lehman H. Dunning. An eminently active and useful life, rich in high aim and great accomplishments, has come to an untimely end. A kindly nature of strong moral quality; an enthusiastic and tireless worker in our special field; a serious, intent and forceful presence on all occasions, he looms up vividly before our mental eye at this hour of his commemoration.

Dr. Dunning was born at Edwardsburg, Mich., April 12, 1850, the son of a successful farmer. His ancestors were originally English and had settled in the State of New York. His grandfather, Dr. Isaac D. Dunning, was a leading practitioner in medicine at Aurora, N. Y., for thirty years, and then emigrated to Michigan about 1836.

Lehman Herbert Dunning was educated at the Edwardsburg High School. Contrary to the will and without the support of his father, he selected the profession of medicine for his life's work. He attended two courses of lectures at the Medical Department of the University of Buffalo, and completed his studies at Rush Medical College, Chicago, where he graduated in January, 1872, with special honor. Dr. Dunning began the practice of medicine at Troy, Mich.; removed to South Bend, Ind., in 1878, and to Indianapolis in 1889, where he remained to his end.

At Troy his earnest and energetic application and wideawake interests brought him conspicuous and varied recognition. His

*Note by the Secretary.—Dr. Pantzer was especially appointed by the president to deliver this address, which was read by the author as part of the proceedings.



DR. LEHMAN HERBERT DUNNING

desire for literary improvement soon made him a leading factor in the lyceum work of his little town and vicinity. For a time he was District Superintendent of Public Instruction. He was appointed local correspondent of the Michigan State Board of Health. In performing the duties of this office he acquired his first experience as a writer on medical subjects. Dr. Dunning was a devout and practical Methodist all his life. At this early stage we find him in the position of Superintendent of the Sunday school of the Troy Methodist Church. Meanwhile he had worked into a large medical practice. This was of the severe country type, which appeased well his ardent desire for work. In 1875 he married Miss Harriet Beauchamp of Edwardsburg. Mrs. Dunning and three children—namely, Miss Florence, Lehman, Jr., and Herbert, survive him; the elder son at this writing being a junior in medicine at the Indiana Medical College.

At South Bend he sought and found a larger field for his ambition. Modern surgery and gynecology were then just in their early dawn. A nature like his, inherently drawn to deeds, intuitively found these fields. With avidity and zeal he applied himself to their study and practice. The current literature he gleaned with eagerness, and practical demonstration was sought at post-graduate courses. His contributions to medical literature during this time give fair index of his doings. It appears that he gave much and successful attention to genitourinary diseases. He was one of the first in his part of the country to treat the floating kidney by fixation; and he also did nephrectomy for suppurative disease. His early gynecologic papers are case reports with remarks, evincing his thorough study and intense interest in the subject. They pertain to developmental deficiencies and anomalies of the uterus; to pelvic peritonitis; to mammary and uterine cancer. These papers were read at county and at the Indiana State society meetings, and were published in various journals in different parts of the United States. They served well to give him renown. Accordingly, in 1889 he was appointed Adjunct Professor of Diseases of Women in the Indiana Medical College.

Preparatory to his removal to Indianapolis he took an extensive trip abroad, visiting the hospitals of Vienna, London, and Paris. Upon the death, in December, 1889, of the illustrious pioneer in gynecology in Indiana, Dr. Thomas B. Harvey, who had held the chair of Medical and Surgical Diseases of Women since the organization of the Indiana Medical College in 1869, Dr. Dunning was appointed his successor. With this advent came to him

the opportunity to fully unfold his truly phenomenal capacity and capability for work. Dr. Joseph Eastman, the distinguished Professor of Gynecology of the Central College of Physicians and Surgeons of Indianapolis, at that time was in his zenith. During the declining years of Dr. Harvey the former had quite undisputed and effectual sway. Notwithstanding this, Dr. Dunning, as the sole representative in gynecology of the Indiana Medical College, in his early Indianapolis career soon obtained the practically undivided patronage of a large alumni scattered all over the State of Indiana. This afforded him a task in and out of the city which alone would have exhausted the capacity of any ordinary man. Inexperienced in clinical and didactic lecturing, his serious and untiring devotion soon made him a fluent, clear and terse lecturer.

Besides didactic lecturing to seniors and juniors, and giving two and more clinics a week at the City Hospital and Dispensary and at the St. Vincent's Hospital, he lectured on gynecology to the pupil nurses of four training schools. Practically unacquainted with the more strictly scientific and laboratory methods of modern medicine, he zealously applied himself in his odd hours to the study of microscopic pathology. In this field he was destined by his own research to successfully refute the hitherto unchallenged view that endometritis in the senile woman was ever of acute origin; indeed, he proved the opposite to be true. He always held important positions on various committees connected with college, medical society, and hospital work, and never failed to give them prompt and conscientious consideration. He wrote many medical papers and addresses to medical and nurses' associations. All evince his earnest spirit and comprehensive knowledge. An instance is that ever since his fellowship in this society he has given a carefully prepared paper at every meeting. His papers dealt preeminently with the practical side of medical life. There is probably no moot question of his day in his specialty upon which Dr. Dunning did not give expression to his views on one occasion or other. Many honors have come to Dr. Dunning. Especially noteworthy are his election to the office of President of the Indianapolis Medical Society, the Indianapolis Gynecological Society, and the American Association of Obstetricians and Gynecologists, and last, in 1904, to the office of Chairman of the Section of Gynecology of the American Medical Association.

Away from the common tendency to materialism among scientific students, Dr. Dunning all his life was "ever conscious of the

spiritual relations of nature and religion." As previously mentioned, he was a devout and dutiful member of the Methodist Episcopal Church, holding important office in it at all stages, and giving freely of his time. He presented numerous papers and addresses to various church gatherings of local and national character, including Young Men's and Women's Christian Associations. His work along these lines found great recognition and praise in the resolutions adopted upon his death by the Board of the Central Avenue Methodist Episcopal Church, of which he had been for many years and at the time of his death an active, highly esteemed member.

It seems natural, though hardly feasible, that besides all that has been mentioned, Dr. Dunning should have given additional time and thought to special literary studies. While traveling on trains to and from his professional calls, he invariably carried a pocket edition of some classic author with him. His vintage in this field shows a notable yield in the papers he furnished to the Indianapolis Literary Club. The subjects of his papers show his great interest in Shakespeare. For a while he conducted the work of a small class composed of advanced Shakespeare students of the club.

Dr. Dunning was essentially gentle and kind, easily stirred to the depths of his nature, and aroused to deeds of active kindness. He was a loving husband and a prideful father, whose yearning nature in the midst of his busy career was yet able to extract from his family relations the sweetest joys of life. Mrs. Dunning has been an invalid for many years, and his loving and duteous devotion to her constitutes one of the great chapters of his life. The most solicitous thoughts of his last day were given to the consideration of a change of climate for his wife. In the toil and din of his everyday life his emotional nature rarely found opportunity for expression. The writer in his position of competitor in the same field, naturally had little occasion to study the man at close range. All the more the view at a distance brought out the full figure, sterling qualities and capacity for work of his rival. The organization, largely by Dr. Dunning's efforts, of a gynecological society by all the gynecologists in the Indianapolis field during the last three years had increased occasion for personal contact. And even more, a few long train rides with Dr. Dunning, to and from medical meetings, brought out free and confidential expressions. They served to display the ulterior views and motives of this strong and varied nature.

One incident was lastingly impressed upon the mind of the writer. Dr. Dunning had just previously attended the graduating exercises of his daughter at an Eastern school. He described the scene where the girls marched into the hall with their pretty faces radiant with the joyous hopefulness of youth. When he espied his own daughter, his prideful love came up. When she passed near to where he stood, he could not constrain himself; he embraced and kissed her. Tears in his eyes when he told this bespoke more than words the deep emotion he felt. This extreme feeling comes as a gift, a reward by nature, to those who do her work truly, intensely, self-sacrificingly. With it the feelings of pleasure experienced by the common events of daily life are incomparable.

While Dr. Dunning seemed unaware of, and in his actions little perceptibly displayed the effects of the drain and strain upon his constitution, the critical eye could not but in his late years observe the marks of his rapid aging. His end came with suddenness. After an ordinary day of work and worry, he had enjoyed a hearty meal and spent a quiet evening in unusual felicity at his home. He retired at 10 o'clock. He was awakened past midnight by an agonizing pain in his left chest. This returned at short intervals, but seemed definitely subdued under an opiate at about 2 o'clock. At his urgent request his medical attendant left him. He had expressed his belief that all trouble had subsided, and associated its occurrence with the heavy evening meal. He was found dead the next morning, in seemingly calm and peaceful repose. Death had supervened without further struggle. He had died from angina pectoris, a doctor's disease.

Dr. Dunning, without bend or break, had been able to encompass and carry the heavy and toilsome, self-imposed burden of his various tasks. Without physical consciousness of his limits, he never stopped to weigh the consequences. His life presents the happy aspect of a tireless, useful and noble activity, attended with its compensation of outward success and inward satisfaction. It may be said of Dr. Dunning that he had conscientiously passed in all his forces in strictest accountment with his nature. To his surviving friends it must ever be a regretful thought that Dr. Dunning could not have had the quiet philosophical years of advanced age: the golden fruitage of a great experience.

W. H. MYERS, M.D.

BY
MILES F. PORTER, M.D., and H. V. SWERINGEN, M D.,
Fort Wayne.

Dr. William H. Myers was born in Stark County, Ohio, on a farm a few miles west of Massillon, on the 25th of December, 1826, and died Saturday evening, January 5, 1907, having just entered his ninth decade of years. In very early life he exhibited an inquiring turn of mind, and after acquiring a common school education and pursuing a course of self-study in general literature and the sciences, he selected the science of medicine and surgery as his life work. He read medicine with the late Dr. Glass of Hayesville, Ohio, as his preceptor, and matriculated at the Jefferson Medical College, in Philadelphia, where he graduated in the spring of 1855. He enjoyed an intimate acquaintance with several members of the faculty of that university, notably that of Profs. S. D. Gross, Joseph Pancoast, and Chas. D. Meigs. For the latter he named his first born son. Two other sons were named Herschel and Darwin, respectively, so great was his admiration for scientific men. Dr. Myers had practised his profession a few years prior to his graduation in the town of Navarre, Stark County, Ohio, where he was married to Miss Mary Ann Van Sweringen, in May, 1852. Soon after his graduation Dr. Myers located in Loudonville, Ashland County, Ohio, where he at once established himself as a most successful physician and surgeon, and rapidly attained a large practice, extending throughout the adjoining counties, having been frequently called, professionally, to Wooster. Desiring a more populous center in which to locate and a still wider field of professional activity, and being impressed with the idea that Fort Wayne was destined to be in the near future such a center, he removed to that city in 1859 and entered into partnership with the late Dr. Charles E. Sturgis, with whom he continued the practice of his profession until the spring of 1861, when he entered the army as surgeon of the 30th Regiment of Indiana Volunteers, in which position he continued several years, when he was thrown from his horse, fracturing the bones

of his left forearm. He then left his regiment and finally resigned. He continued the practise of his profession in the city of Fort Wayne up to the beginning of his fatal illness, which was simply bronchitis, but his age and consequent lowered vitality were unable to resist the malady.

Dr. Myers' practice, both medical and surgical, was peculiarly eminently successful and extended over the northern part of the State of Indiana. He was the first surgeon in the State to perform the major operations, his skill and daring winning him his most notable successes long before the days of antiseptic surgery. He was the first surgeon in the State to perform the operation for ovarian tumor. The brilliant culmination of a long series of successes in major operations came on August 27, 1892, when he performed a Cesarean section upon a dwarf at the patient's home in New Haven, and followed the delivery of the child by the removal of the womb. Both mother and child recovered. The operation was the first and only one of exactly its kind ever performed in the State, if not in the entire country.

Dr. Myers made two extensive visits to Europe, visiting the various hospitals and universities in that country, and becoming acquainted with its noted men in medicine and surgery, through whose influence he was elected an honorary member of many scientific societies. He was also a member of his local, State, and the American Medical Associations, the American Obstetrical and Gynecological Association, and of a number of purely literary and scientific societies in this country.

Notwithstanding the fact that Dr. Myers long enjoyed a most lucrative practise, he died a poor man, so far as this world's goods are concerned. Nothing was more positively distasteful to him that the financial part of his practise. As long as he had money enough to buy books and instruments and to meet current expenses he was content. So negligent and indifferent was he in regard to the financial interests of his practise that it was a common complaint among his patients that they never were able to get a settlement of their accounts or a satisfactory statement of them. Rather than to take the trouble and time to look over a man's account and make out a bill in a proper, businesslike way, he would propose a sort of snap settlement for a given amount, which invariably was many times less than it really was, than his books would show, and that the debtor himself was aware of. It is needless to say that such liberal propositions for settlement

of his accounts against patients were often accepted with avidity, while occasionally a patron, knowing approximately the amount of his indebtedness, would insist on paying it in full regardless of his proposition to settle it at a reduction.

Dr. Myers possessed the largest library in the State of Indiana. For many years he had a standing order among European and American publishers to send him at once, as soon as issued from the press, everything pertaining to the science of medicine and surgery, and thus was he enabled throughout his long and useful career as a practitioner to keep abreast with his profession. He was generally found to be in advance of his brethren in the knowledge of the very latest in medicine and surgery.

Dr. Myers was the father of the hospitals of Fort Wayne and the originator of the idea of establishing a medical college in that city. He was for many years surgeon of the principal railroads centering in Fort Wayne.

As an expert witness in medico-legal cases Dr. Myers was long considered to be the ablest, most brilliant in Northern Indiana. He always took a peculiar interest and delight in defending his position on any subject, which rendered his services especially valuable to the attorneys who secured them. His predilection for intellectual combat was notorious. For the sake of argument he would often defend a position he knew to be wrong in order to draw fire from his antagonist to ascertain if he could not smother it or put it out by his own logic.

Throughout his professional career, like many of his brethren in the profession, Dr. Myers was inclined toward materialism and agnosticism; and when some ten or twelve years ago the subjects of occultism, spiritualism, psychology, etc., were received and no little general interest was manifested in them, he at once entered the arena to combat them and those who stood for them. He delivered a public lecture in the Masonic Temple Theater in Fort Wayne in refutation of the claims of those who maintained the truths they taught, advancing, of course, the materialistic argument, *i.e.* "that the brain secretes thought as the liver secretes bile," etc. But soon after this lecture he began receiving books fresh from the press, every one of which read very differently from those he had quoted in his lecture and on which he had depended for support of his position. He discovered to his surprise that their authors, who were eminent, scientific, and undisputed—Crookes, Wallace, Lombroso, Flammarion, James, Cones,

Hodgson, Hyslop, and others—were writing unquestionably in support of the spiritualism he was so strenuously opposing. His eagerness for the intellectual fight began at once to subside, and every year since then has added to his great library volume after volume upon these most interesting subjects with the result of rendering him the direct opposite of a materialist. So decided was his change of attitude that he recently expressed the opinion that the book of Ernst Haeckel, "The Riddle of the Universe," should be suppressed because of its materialistic teachings.

Dr. Myers was ever extremely sensitive concerning his age. Nothing irritated him more keenly than to be asked how old he was. He was never known to tell his age. In his short, brusque manner he ever insisted that "it was nobody's business."

Dr. Myers had his faults and imperfections, but they were more than counterbalanced by his noble qualities of head and heart. If every patient to whom he had rendered gratuitous valuable services during the last half century could place a flower upon his casket it would be hidden in a monstrous bank of roses.

After nearly a week of gloomy, cloudy, rainy weather, he aroused on Friday morning from a period of semi-coma of some hours' duration and exclaimed "How beautiful the light! It seems to beckon me," and then lapsed again into stupor more or less profound. At another time he reported that he felt he was "flying through space and was enraptured by the various visions he beheld." Peace to his ashes.

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